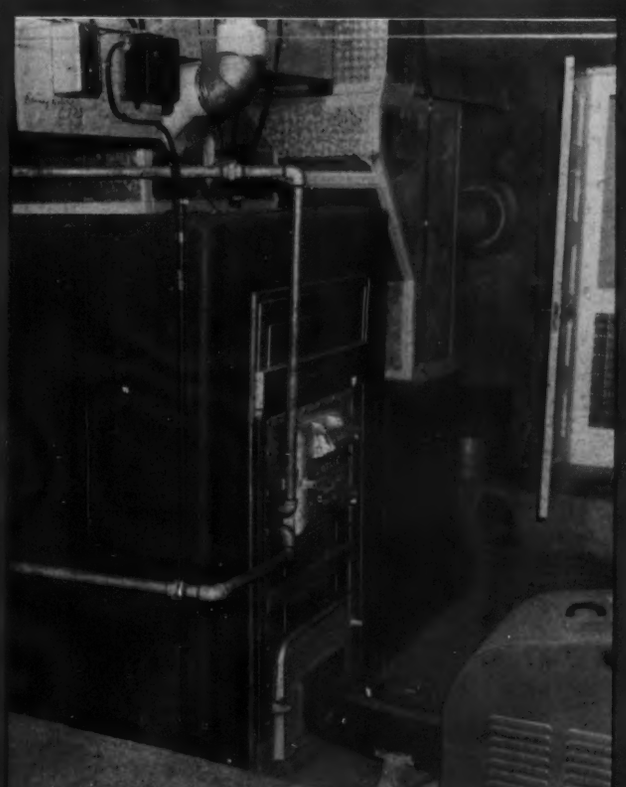
AMERICAN ARTISAN

OCTOBER
1942



RESIDENTIAL AIR CONDITIONING
WARM AIR HEATING • SHEET METAL CONTRACTING

ESTABLISHED
1880

LAMNECK PRODUCTS, Inc.

HEATING EQUIPMENT
"SIMPLIFIED" FURNACE PIPE AND FITTINGS, AIR CONDITIONING DUCT AND FITTINGS, GRAVITY AND AIR CONDITIONING REGISTERS AND GRILLES.

FARM EQUIPMENT
"BUCKEYE" METAL CORN CRIBS AND GRAIN BINS, "SILVER SHIELD" METAL SILOS, ROOFS AND SILO ACCESSORIES, TANKS, TROUGHS AND FOUNTAINS.

MIDDLETOWN, OHIO

October, 1942

An Open Letter
To Our Trade.

The war effort is directing our minds and hands into new channels. Our peace time business has changed for the duration.

We, here at Lamneck, are trying to do more than we have ever attempted before. Our supply of raw material has not only been curtailed, but has been completely shut off.

And yet, with all our difficulties of organizing for the war effort, it is small compared to the sacrifices of some of the peoples of the world.

In these difficult times, we have attempted to stretch or spread our remaining stock of fittings, just as evenly and as fairly as possible between loyal customers, who have, with their confidence and support, helped us build this business.

We are working for the Air Corps, and for you in any way that regulations and restrictions will permit.

Our obligation is the same as yours - first to the nation and then to old business friendships - long may they live.

Sincerely yours,

Perl S. Miller

Perl S. Miller, President
LAMNECK PRODUCTS, INC.

PSM/PCF

P.S. We hope you understand.

LAMNECK PRODUCTS INC. Middletown, Ohio

Simplified Furnace Pipe and Fittings and Prefabricated Duct and Fittings for all Types of Residential Gravity and Forced Warm Air Heating and Air Conditioning Systems.

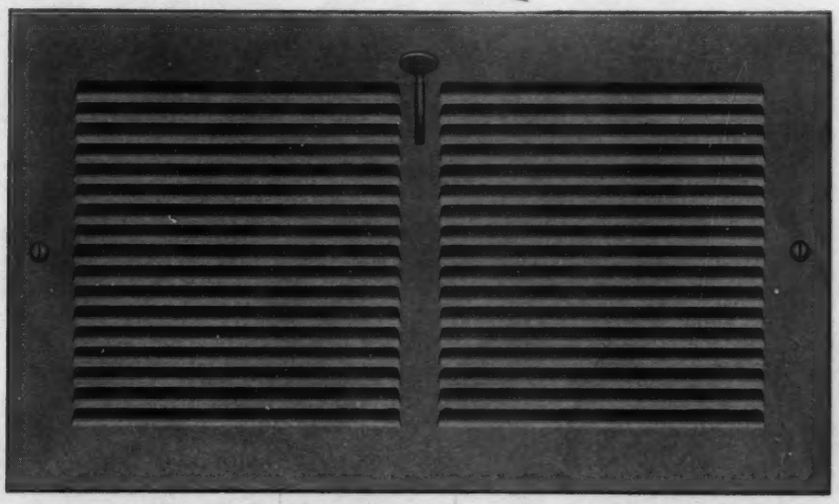


Fig. 7032
Airo-Flex Register

Auer REGISTERS FOR LOW-COST HOMES

For housing construction under wartime conditions, the emphasis in building products is on simplicity and moderate cost. There are numerous designs in Auer Registers, for the simplest gravity systems and also for forced air or air conditioning, which suit these low-cost requirements.

For example, the Auer Airo-Flex "7000" model shown above is extremely popular for small homes and group housing. This is a single louvre register with grille fins easily adjusted with turning tool at time of installation—up, straight, or as much as 22° downward. The "7000" is a smart-looking register which gives high efficiency on any warm air job.

Included in Auer's complete line are many types of modern registers and intakes which are well adapted to small-home use and economical in cost.

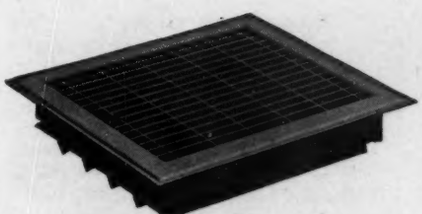


Fig. DR—DuraBilt Register

Ask for Auer Register Book. Catalog "G" on flat stamped metal grilles also sent on request.

THE AUER REGISTER CO., Cleveland, Ohio

AUER REGISTERS
& GRILLES · For Air Conditioning *and* Gravity

AMERICAN ARTISAN

WITH WHICH ARE MERGED

FURNACES AND SHEET METALS

AND

Warm-Air Heating

Covering All Activities in Residential Air Conditioning and Small Commercial Cooling, Warm Air Heating, Sheet Metal Contracting and Fabricating

J. D. Wilder, Editor — A. A. Kennedy, Assistant Editor

Vol. 111, No. 10 — October, 1942 — Founded 1880

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In This Issue

PROBABLY the most interesting item in this issue is our analysis of the fuel oil conservation program on page 32. Certainly no discussion is currently creating so much conversation both in the trade and among home owners.

◆

In many ways, the fuel conservation program is suffering from the same unfortunate publicity and hasty application as now complicates the rubber and gasoline programs. In other words, much too much free and easy official pronouncements and much too much poor explanation have been given the public.

◆

We believe that the explanation of the program could have been given the public in such a way that owners would be glad to cooperate. Instead, thousands of owners are antagonistic because they think there is no real need to cut oil consumption.

◆

As with gasoline, there is no dearth of fuel oil. The trouble comes from a lack of transportation. Owners reading of tanker sinkings can understand why oil is scarce in the east, but just how mid-west tank cars must be sent east and thus reduce the amount of oil the mid-west gets is not so well understood. But that's why conservation in the mid-west.

◆

We call readers' particular attention to Professor Konzo's article on page 37. Note he says fuel cannot be conserved by buying gadgets. Real, honest analysis of heating plant efficiency and trained service alone can get more efficiency out of a furnace.

◆

And the article on page 41, we hope, with variations to suit your particular circumstances, will stimulate every reader to acquaint his customers with the service only our industry can offer.

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The guy who uses his bean in selling SCRAP!

Helps the war effort and also his pocketbook by separating Monel and Pure Nickel from base metals

A contractor I called on last week sure knows how to cash in on the scrap he picks up 'round his place. "Uncle Sam needs Nickel for his war effort an' I need the extra dough it brings in."

I ask him can he *smell* which scrap is Nickel, Monel, or what have you. No, he tells me, but there's easy ways to find out. So I'm givin' you the dope just how this guy goes about it:

STEP No. 1—*Test with strong horseshoe magnet:*

a. *If strongly magnetic,* it may be nickel, ordinary steel, cast iron or chromium-iron stainless steel.

b. *If slightly magnetic,* it probably is Monel or cold-worked 18-8 stainless steel with or without molybdenum. If specimen loses its magnetism when heated in boiling water it is MONEL.

c. *If non-magnetic,* it may be nickel silver, "K" Monel, "S" Monel, Inconel, or chromium-nickel stainless steel.

STEP No. 2—*For strongly magnetic materials:*
Place a drop of concentrated nitric acid on a cleaned area.

a. If acid reacts slowly to a pale-green color, material is NICKEL.

b. If no reaction occurs, or acid turns brown, material is not a high-Nickel alloy.

STEP No. 3—*For slightly magnetic materials:*
Place a drop of concentrated nitric acid on a cleaned area.

a. If acid reacts to a green-blue color, MONEL is indicated.

b. After reaction has ceased, add one or two drops of water, immerse an iron nail or steel knife blade in the drop and in contact with the test sample. If the nail or knife blade becomes coated with copper, or if a copper deposit appears on the material being tested, the latter is MONEL.

STEP No. 4—*For non-magnetic materials:*
Place a drop of concentrated nitric acid on a cleaned area.

a. If acid reacts rapidly to a blue-green color, the material is NICKEL SILVER or COPPER NICKEL.

b. If the acid reacts to a green-blue color, the material is "K" MONEL or "S" MONEL. The form of the material will usually assist in identification since "K" MONEL is never cast and "S" MONEL is never wrought.

c. If no reaction occurs, the material may be either Inconel or chromium-nickel stainless steel with or without molybdenum.

In case you can't remember all of this dope, I can give it to you in the form of a handy table. Just ask for the table showing "How to Separate Nickel from Scrap."

And the front office wants you to know the Nickel Company will buy all the Monel and Pure Nickel scrap you can get your hands on.

Keep it comin',

Tim Shears

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK, N. Y.

LIFE
THE SATURDAY EVENING POST
The AMERICAN HOME
Second Line of Defense
Better Homes & Gardens
THESE MAGAZINES ARE TELLING THE DUST-STOP* STORY TO MILLIONS.
AND THAT MEANS BUSINESS HEADIN' RIGHT MY WAY.

5-month nation-wide advertising campaign TO BOOST YOUR DUST-STOP SALES

ATTRACTIVE, big-space Dust-Stop advertising in 4 leading magazines—a total of 57,319,145 ads—that's the way Dust-Stop is backing up its dealers.

Right now is the time to cooperate

This powerful advertising is just now getting under way. It is being read by hundreds of householders in your locality. You know that heating problems are more talked about this year than ever before . . . that puts Dust-Stops right in line for consideration. So why not get aboard?

Send for these FREE Dust-Stop Dealer Helps

1. **Attention-getting newspaper advertisements**—all ready to be turned over to your local newspapers.

2. **Attractive mailing pieces**—a strong-pulling direct-mail campaign to send customers to your store.

3. **Reminder postcards**—follow-ups for the mailing pieces. Imprinted with your name, address and telephone number.

4. **Radio spot announcements**—all ready to go on the air to boost your name and business.

5. **Window and counter displays**—big colorful eye-catchers that immediately tie-in your store with all the other Dust-Stop advertising.

6. **Furnace labels**—keep your name and address constantly in front of householders.

You get Plus-advantages, too

When you tie in with Dust-Stop advertising, besides getting Dust-Stop replacement business, *you'll be the one they think of for furnace service and repair work.* So, call your distributor now about Dust-Stop's NEW SALES PLAN—"Pulling Profits out of the Air." *Owens-Corning Fiberglas Corporation, Toledo, Ohio. In Canada, Fiberglas Canada, Ltd., Oshawa, Ontario.*

FIBERGLAS*

DUSTOP*

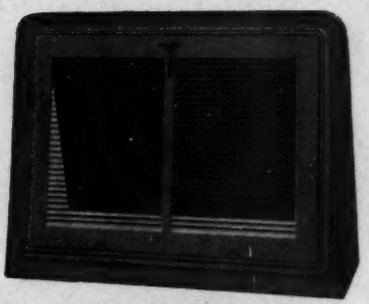
*T. M. Reg. U. S. Pat. Off.

AIR FILTERS

"FROM SOUP TO NUTS" IN WAR PRODUCTION

BUT STILL LEADING IN PRODUCTION OF REGISTERS and GRILLES for WAR HOUSING

FOR GRAVITY COAL-FIRED JOBS



No. 40 SERIES

U. S. GRAVITY BASEBOARD REGISTERS

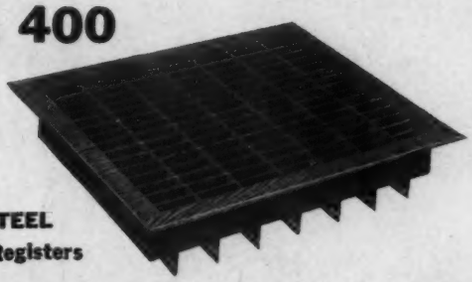
☆

Especially adaptable for conversion to air-conditioning systems. Leak-proof—non-vision. Grille Bars can be set for Up- or Down-flow of Air, as required.

No. 400

☆

TRUSSTEEL Floor Registers



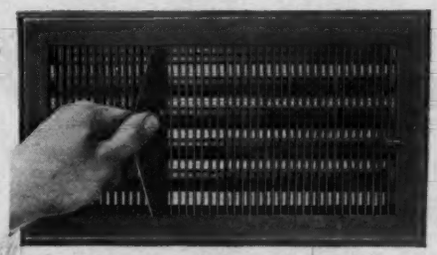
A heel-proof maximum-free-area register of sturdy construction with multiple valves running short way for easier operation, cleaner walls. Natural wood finish.

FOR FORCED-AIR CONDITIONING SYSTEMS

★

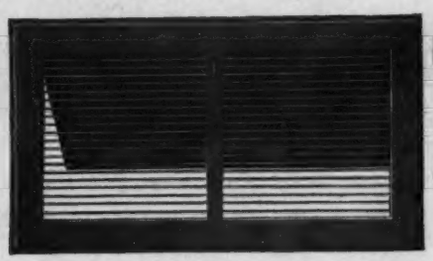
No. 256 4-WAY FLOW Air Conditioning Registers

★



Vertical Grille Bars standard setting 22° Right and Left flow, which may be reset to other deflections with setting wrench. Horizontal Rear Valve lever operated for Up and Down Flow and Closing.

★



No. 153 LOUVER TYPE Air Conditioning Registers

★

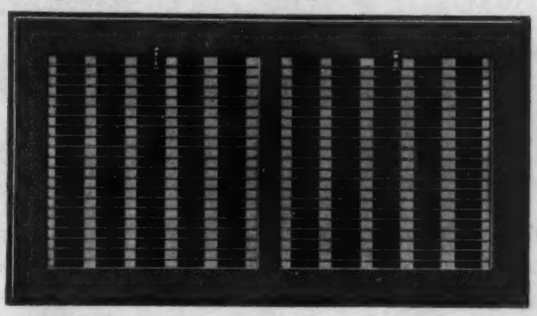
No. 153 U. S. Air-Conditioning Register (Single Valve). Horizontal Bar Grille Design. Grille Bar Deflection may be changed with setting wrench.

★

No. 153 V. V. L. U. S. AIR-CONDITIONING REGISTERS

(4-Way Flow)

★



★

The ONLY Horizontal Grille Bar Design with Dual-lever operation that directs the air stream BOTH Right and Left through Vertical Rear Valves and with Up and Down deflection through Grille Bars.

★

U. S. Register installations include practically all of the vital war projects in America from the largest housing groups to ordnance plants and important air field buildings. Wherever modern design, efficiency and right price are factors, U. S. registers and grilles go in! Modern production facilities and skilled workmen help keep U. S. ahead in the Gravity and Air-Conditioning register field.

UNITED STATES REGISTER CO.

BATTLE CREEK, MICHIGAN

MINNEAPOLIS • KANSAS CITY • ALBANY • SAN FRANCISCO • NEW YORK, N. Y.

We Want to Buy!

Have you a *MATERIAL* that can be used in place of *Sheet Steel* in the manufacture of these roof ventilators?

. . . . or do you know where such a material can be procured?

• • •

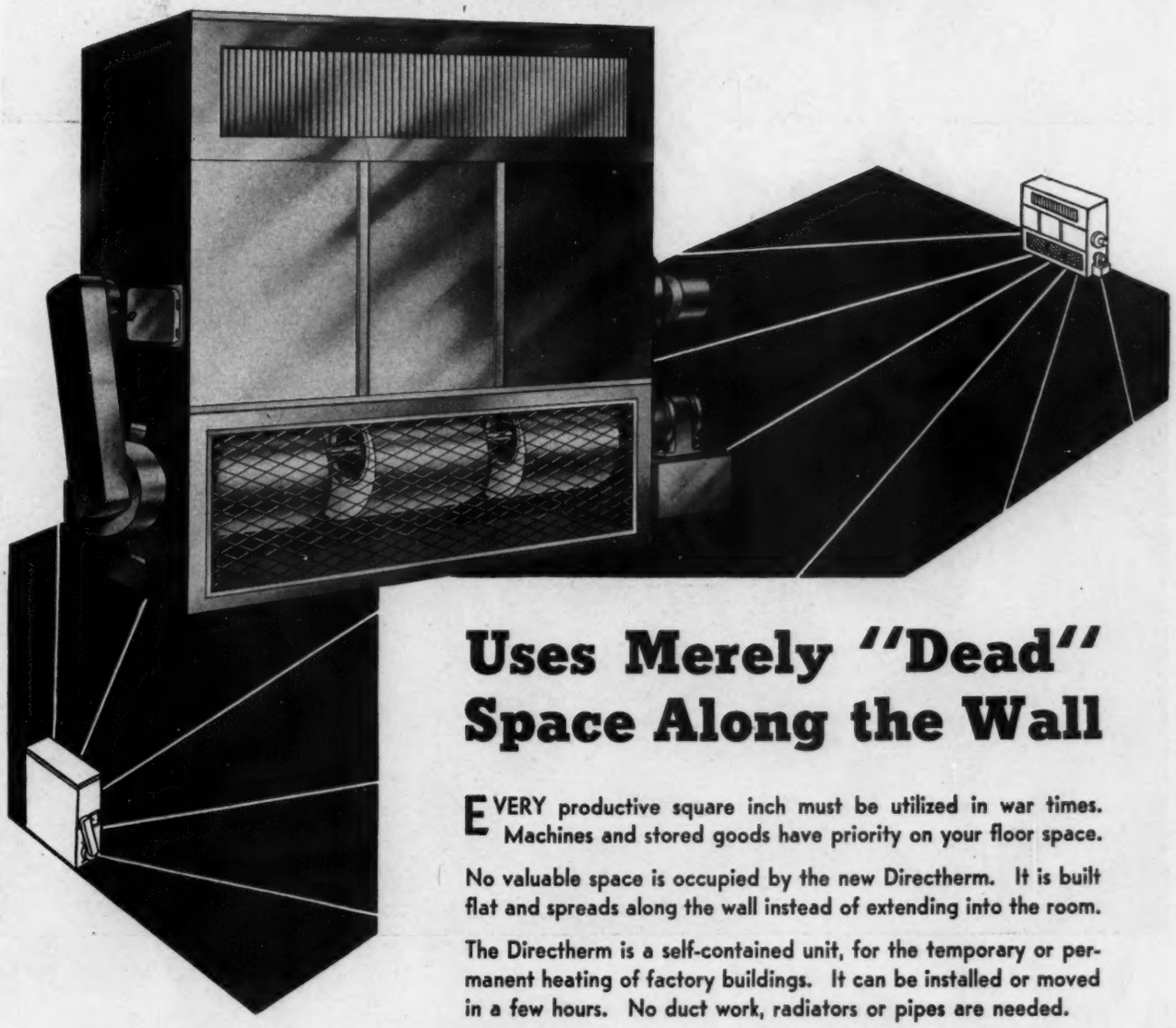
We want to keep the leading line of ***Industrial Roof Ventilators*** available for *ALL* users—which includes the Army, Navy and War Industry—during the emergency. To do so and at the same time to conserve critical metal, we are attempting to replace sheet steel heretofore used. The material we are looking for should be durable, weatherproof, possible to fabricate and obtainable in large quantities. What have you to offer or suggest? *Write, wire or telephone to*

The Swartwout Company

18511 EUCLID AVENUE • CLEVELAND, OHIO

THE NEW DIRECTHERM HEATER

SPACE-SAVER TYPE



Uses Merely "Dead" Space Along the Wall

EVERY productive square inch must be utilized in war times. Machines and stored goods have priority on your floor space.

No valuable space is occupied by the new Directherm. It is built flat and spreads along the wall instead of extending into the room.

The Directherm is a self-contained unit, for the temporary or permanent heating of factory buildings. It can be installed or moved in a few hours. No duct work, radiators or pipes are needed.

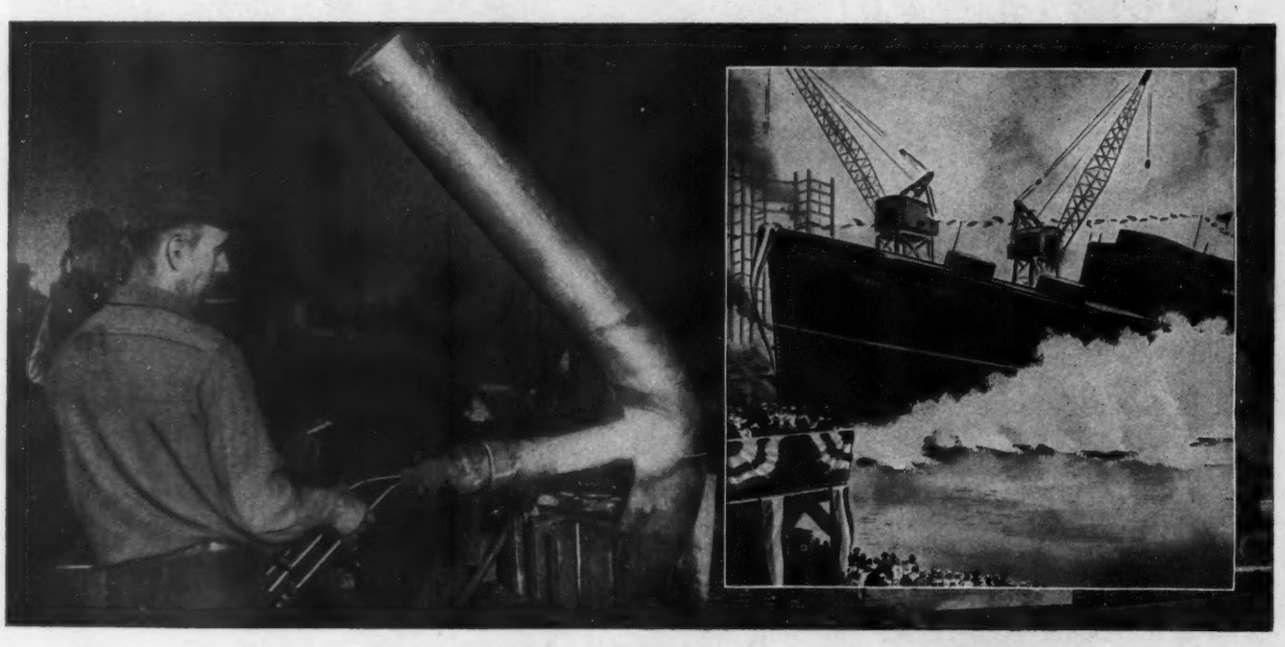
Eighty percent of the invested fuel energy is converted to heat, which is cast into the room as far away as 200 feet. That is economy!

For oil or gas fuel. Made in 3 standard sizes (750,000-1,700,000 BTU). Standard Directherm Heaters in 6 sizes (300,000-1,700,000 BTU) for coal, oil or gas fuel.

AIRTHERM
MANUFACTURING COMPANY
706 S. SPRING AVE. · ST. LOUIS, MO.

Instead—

makes special copper tube shapes like this for our merchant marine



TODAY, the long-lasting standby metal of your trade... copper... is needed for war production. We know you realize its importance in America's struggle for victory. Huge quantities are required for ammunition, for planes and tanks and ships.

Typical of the wartime applications for which copper is so vitally needed is this special shaped tube of sheet copper for use on a new merchant vessel. Copper equipment in a hundred different forms is needed in large quantities and with the greatest speed to keep pace with our expanded shipbuilding program.

The time-honored properties of copper with which the sheet metal trade has so long been familiar... rust immunity, corrosion resistance, heat conductivity and easy fabrication... these are the reasons why copper is in such great demand by our war essential industries.

THE AMERICAN BRASS COMPANY
General Offices: Waterbury, Connecticut
Subsidiary of Anaconda Copper Mining Company
In Canada: ANACONDA AMERICAN BRASS LTD.
New Toronto, Ont. 4231

Anaconda Copper

ARMY E NAVY

Accomplishment!

★ ★ ★ ★ ★ BY THE MEN AND WOMEN OF OIL-O-MATIC

CONGRATULATIONS

TO THE WORKERS OF OIL-O-MATIC

The Army-Navy Production Award is its own proof of the good job you are all doing. Yet, because I personally know the loyalty and untiring devotion which each of you has given to our vital War assignment, I do want to publicly add my congratulations and appreciation for a job well done. The Army-Navy Production Award is an inspiring symbol of the manner in which we of Oil-O-Matic have kept faith with our fighting men.

W. W. Williams
President

WAR DEPARTMENT
OFFICE OF THE UNDER SECRETARY
WASHINGTON, D. C.

August 15, 1942

Mr. W. W. Williams, President
Williams Oil-O-Matic Heating Corporation
Bloomington, Illinois

Dear Mr. Williams:

This is to inform you that the Army and Navy are conferring upon your organization the Army-Navy Production Award for high achievement in the production of war equipment.

The award consists of a flag to be flown above your plant, and a lapel pin which every member of the Williams Oil-O-Matic Heating Corporation may wear as a mark of their inspiring contribution to the future of our country.

The accomplishment of the men and women of your organization during the past year has set a high standard of practical patriotism. The Army and Navy are confident that their record of accomplishment in the future will raise that standard even higher.

Sincerely yours,

Robert P. Patterson
Under Secretary of War

WILLIAMS OIL-O-MATIC HEATING CORPORATION · BLOOMINGTON, ILLINOIS

For more than 20 years manufacturers of precision-built oil heating equipment. For the duration — producers of precision-built War materiel — 24 hours a day, 7 days a week.

He's in a tough spot, too...

BUT NEVER TOO TOUGH TO HELP YOU

If you think you're hard hit by steel shortages, consider your Republic Sheet Distributor.

It's his job to stock and deliver the sheets—Republic Steel, U-Loy* Copper-Bearing Steel, Enduro* Stainless Steel, Toncan* Iron, Taylor Roofing Ternes—that you need. He has built a business, invested his money and trained an organization to do it. He has always said "Yes" to your demands for sheets. But now, *Wartime Production* is demanding more and more steel, especially flat-rolled steel for tanks, trucks, ships and other vital war needs. Because of this, he cannot obtain the same quantities of sheets he did last year—and he may have to say "No, you can't have that many sheets" to some of his best friends.

Yet, he knows his customers are depending on him. He feels that he must help—in some way. And when a man with that attitude is plugging for you, you'll get the best service available today.

Tough as his position is, he often gets results in meeting job requirements. He may be able to give you a few sheets of most sizes and grades. If not the one you need, he'll do his best to get it for you. Or, perhaps, another grade in stock will do almost as well, and keep the job moving. His long experience will be helpful—and his literature, too. Get copies of his booklets on the fabrication and welding of Enduro Stainless Steel.

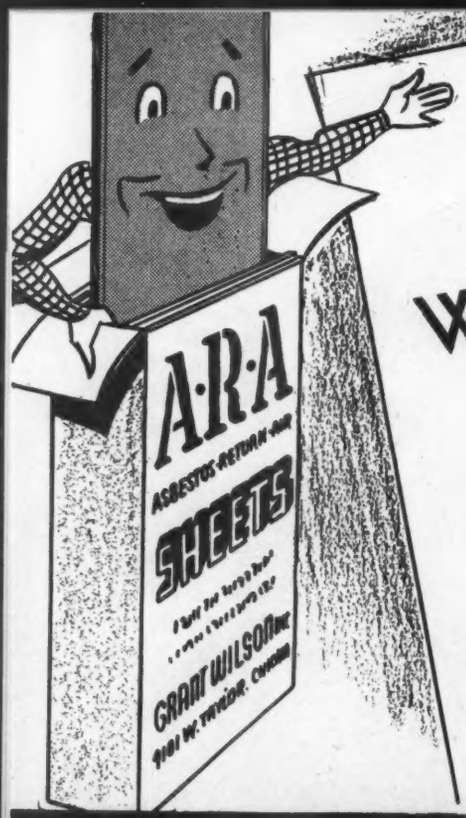
Put it up to your Republic Distributor *first,* to see what he can do about your sheet problems. You can help him to do a better job for you and speed up deliveries by keeping informed on current Governmental regulations—and by giving him *complete information* on how you intend to use the materials, priority rating and other pertinent facts. Republic Steel Corporation, Alloy Steel Division Sales Offices, Massillon, Ohio—General Offices, Cleveland, Ohio.

*Reg. U. S. Pat. Off.

REPUBLIC STEEL
PRODUCTION FOR VICTORY

REPUBLIC *Enduro* S

STAINLESS STEEL



I'M DRAFTED – AND ACCEPTED!

Where sheet steel used to be used

You'll find me flat on my back, lying on my side, worked into all sorts of shapes and angles doing a satisfactory job. You can use me whether your job is a small modernization . . . a big government building . . . a defense housing project . . . or an industrial plant expansion.

Right in your own shop, or the job you can fabricate A.R.A. Sheets into ducts, round pipes, and fittings with ease, speed and economy.

A·R·A

ASBESTOS • RETURN • AIR

SHEETS

COLD AIR RETURNS

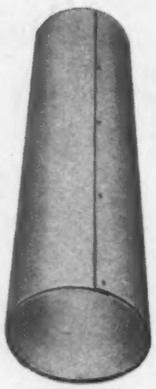
In their original flat form, you merely nail the 33" or 16½" wide A.R.A. Sheets to the bottom of joists to form Cold Air Return Ducts.

THE PACKAGE

A.R.A. Sheets are shipped in an easy-to-handle carton weighing about 100 lbs. There are 20 Sheets 33" wide x 48" or 40 Sheets 16½" wide x 48" packed to a carton.

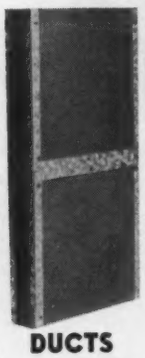
NON CON DUX

This seal is your assurance that our products are scientifically designed and skillfully made to rigid specifications.



ROUND PIPE

You can roll A.R.A. Sheets on your own rollers into smooth, strong, round pipe. A standard metal seam can be used for the long joint and a sleeve of A.R.A. Sheets or metal can be used for the butt joints.



DUCTS

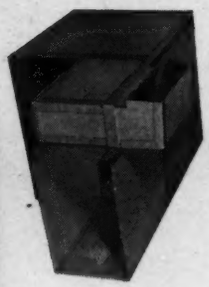
You can cut A.R.A. Sheets into panels and fabricate them into duct work by using scrap metal for the corners and joints. The metal pieces can be attached to the A.R.A. Sheets with ordinary sheet metal screws.

DUCTS

By "setting" your brake to allow for the 3/16" thickness of A.R.A. Sheets, you can fold or bend at right angles to form small one-piece ducts or stacks. A preformed metal seam may be used for the long joint or the butt joints.

FITTINGS

Right in your own shop and with your own tools you can completely fabricate A.R.A. Sheets into fittings using no sheet metal.



FITTINGS

Intricate and complicated fittings can be easily fabricated in your own shop using a minimum of metal.

A Grant Wilson Product
Free Manual Telling of Uses Sent on Request.

4101 WEST TAYLOR ST. **GRANT WILSON, INC.** CHICAGO ILLINOIS

Lots of hot water...on hand instantly...day or night!

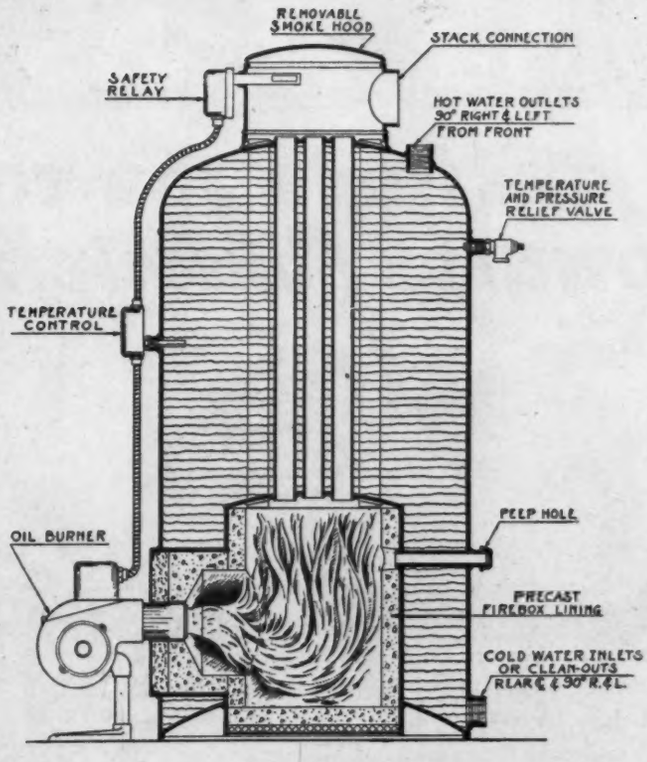
Here's a Water Heater that offers heavy duty performance at minimum costs . . . with a minimum use of critical materials.

270 G.P.H. 100° Rise

230 Gal. Self Contained Storage Tank

Ideal for Army Barracks, Hospitals and Kitchens, and for War Housing Dormitories, Factories, etc., where heavy use of hot water demands large capacity.

No Insulation, no Galvanizing on Standard Units


REMOVABLE SMOKE HOOD
STACK CONNECTION
SAFETY RELAY
HOT WATER OUTLETS 90° RIGHT & LEFT FROM FRONT
TEMPERATURE AND PRESSURE RELIEF VALVE
TEMPERATURE CONTROL
PEEP HOLE
OIL BURNER
PRECAST FIREBOX LINING
COLD WATER INLETS OR CLEAN-OUTS REAR ℄ & 90° R.&L.

The New Fully Automatic JOHNSON AQULUX-225

Here's the answer to a wartime need . . . a fully automatic water heater that delivers 270 gallons per hour . . . that consumes a minimum of fuel . . . that is built with a minimum of critical materials.

It has the famous Johnson Bankheat Burner with 225,000 btu output to insure high recovery and large volume . . . a burner which carries the Underwriters' and Commercial Standard Label for safety and performance.

The 230 gallon tank is not insulated, nor galvanized, nor encased in a steel jacket (except on special order). In these and other ways, the use of essential materials has been cut to a minimum without sacrificing efficiency or safety.

It is built of black steel plates, electric arc welded; extra heavy steel fire-tubes; and precast refractory lined combustion chamber for oil or gas fuel. Temperature and pressure relief and drain valve are standard equipment. It requires little floor space. Installation is simple and inexpensive.

May we send you the complete data on this wartime "big brother" of the widely known Aqulux 85 and 150 models? Or on the still larger, standard Johnson heaters with capacities up to 600 g.p.h. and special units which we can build to your particular specifications? We'll send it gladly.

S. T. JOHNSON CO.

40 years experience in the Engineering and Manufacturing of Fuel Oil Equipment

940 Arlington Ave., Oakland, Calif. 401 N. Broad St., Philadelphia, Pa.

RYBOLT

IT'S YOUR JOB TO HELP FURNACE OWNERS *Conserve Fuel* THIS WINTER

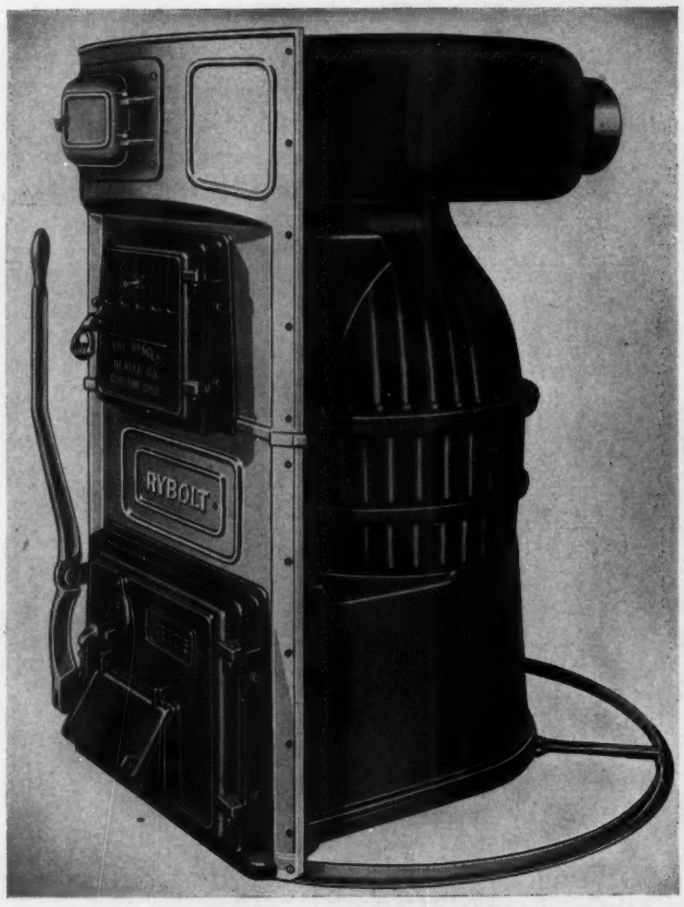
FROM all indications, fuel is going to be hard to get this winter. Naturally, therefore, it is going to be more important than ever for every furnace owner to get maximum heat from the fuel he buys—to help the war economy as well as to insure the comfort of his family.

Your job is cut out for you—to check every furnace in your territory and urge that it be cleaned and repaired if necessary. For RYBOLT heating units use only *original* repair parts, which we are prepared to furnish promptly.

Furnace repair work is not only a substantial source of income for you, but it offers a splendid opportunity to contribute to the war effort. Do your bit to conserve metal by using new parts only where necessary. Also contribute to the scrap drive all possible old and discarded metal.

Here and there you will find furnaces which are worn out beyond repair. To replace these, RYBOLT units are available in limited quantities to regularly established RYBOLT dealers and jobbers, under Government Order P-84.

TRADE MARK



RYBOLT SERIES 15

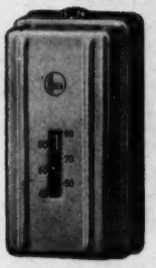
Cast Iron Coal-Fired Gravity Furnace

Ideally adapted for replacement business, RYBOLT Series 15 is a quality furnace throughout, attractive in appearance, designed and built for durability, utmost heating efficiency and economy. Distinctive features are the large capacity fire bowl and combustion chamber, corrugated inside and out, extra large duplex ball-bearing grates, waist-high shaking lever, slip-on front cast construction, effective smoke consumer, smoke- and gas-tight joints, extra weight castings. 5 sizes.

THE RYBOLT HEATER COMPANY

615 MILLER STREET • ASHLAND, OHIO

Install DRAFTENDER To Save Fuel on Hand-Fired Jobs



There's a double opportunity, to serve and to profit, by installing Penn Draftender Comfort Control on hand-fired heating systems . . . warm air, steam, hot water. Draftender effects real savings of coal, and with the emphasis on fuel conservation during the war emergency, there are plenty of sales opportunities.

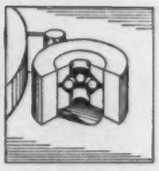
Draftender automatically operates the drafts under the control of any existing thermostat or by Temtrol, Penn's famous heat anticipating thermostat. This auxiliary heat actuated thermostat actually "senses" temperature changes before they occur, prevents over-runs and wide swings of temperature and thus assures more economical firing.

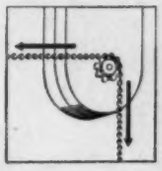
This hand-fired control system is easy to install, provides some important advantages of automatic heating, along with its definitely proved economy. Draftender is ideal for use on the furnaces being installed in defense housing projects. With the toggle switch, which is supplied when desired, for manual operation of the drafts, Draftender conforms with government specifications for use in army barracks.

Furnished for all types of hand-fired heating systems, Draftender Units only are available for immediate delivery, while Draftender Sets including Temtrol are available under existing government regulations. Get in on this profit opportunity now—write for detailed information, without obligation. *Penn Electric Switch Co., Goshen, Ind.*

★

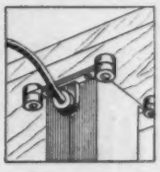
Permanently lubricated self-centering, self-aligning ball bearings carry both ends of the motor shaft; reduce friction and wear.





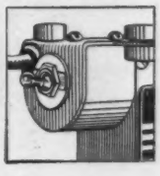
Rugged operating chain is simple to install . . . very easily aligned . . . provides long-life dependability.

Unusually quiet motor is further insulated by this four-point mounting in resilient live rubber. Quickly and easily installed.



Draftender is controlled by standard low-voltage thermostat without necessity of installing a separate transformer.

When desired Draftender is equipped with toggle switch for manual operation of draft; meets specifications for barracks heating.



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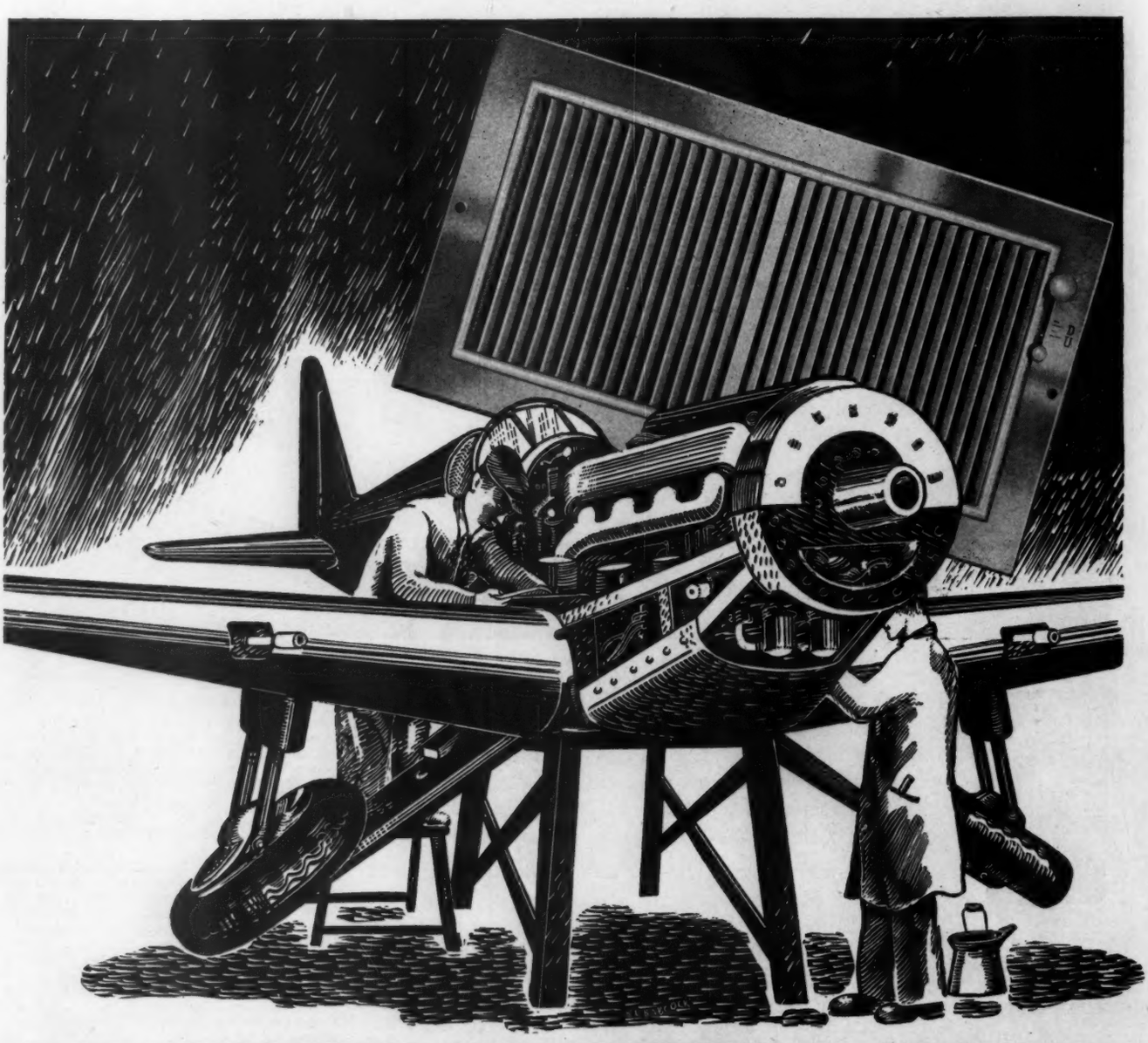
PENN CONTROLS

REFRIGERATION, AIR CONDITIONING, ENGINE, HEATING, PUMPING AND AIR COMPRESSOR



AIR CONTROL REGISTERS & GRILLES

are helping to increase production in War Industries

Modern air conditioning is helping America's War plants turn out more and more precision parts. Proper air distribution is essential to obtain the maximum efficiency and precision. Because of the importance of draftless air conditioning and ventilation—AIR CONTROL Registers and Grilles have been chosen for some of America's most vital war plants. Among the recent installations is the new Wright Aeronautical Plant at Lockland, Ohio.

When you choose Registers and Grilles for your Heating, Ventilating or Air Conditioning Systems — specify "AIR CONTROL."

Call your local AIR CONTROL Jobber or write direct for full details—including our new Catalog No. 42.

also ARMS for AMERICA'S FIGHTING FORCES

Air Control Products, Inc.

COOPERSVILLE • MICHIGAN

"That's why we use PARKER-KALON Sheet Metal Screws", says Mr. W. L. Crown, W. H. Arthur Company, Asheville, N. C.

"One of our biggest jobs in the last few years", says Mr. Crown, "was an 80-ton installation of heating and ventilating ducts in the Asheville Citizen-Times building. The installation was figured to last the life of the building, so naturally the very best materials and workmanship went into the job."

"We like the dependability and fast-working characteristics of P-K Sheet Metal Screws. They are both time-saving and labor-saving – which means money saving on our sheet metal jobs. They make fastenings that we know will stand the test of time."

This contractor, like many others in the sheet metal field, saves time, money and trouble right from the beginning of a job by specifying *Parker-Kalon.* Users know that every P-K Screw will work right and stay in tight. "Doubtful Screws" – screws that *look* all right but some of which fail to *work* right – are eliminated by Parker-Kalon's Quality Control routine. This protects both your profit and your reputation. Parker-Kalon Corporation, 190-192 Varick Street, New York, N. Y.

There's a Size and Type of P-K Screw for every Metal Fastening Job . . . . .

Check up on the jobs you're handling – if you're working with either light or heavy sheets, steel plate, angle-iron or structural shapes, there's a type of Parker-Kalon Self-tapping Screw to help you secure important savings. Send in a description of your job for recommendations and free sample screws.

PARKER-KALON
Quality-Controlled
SHEET METAL SCREWS

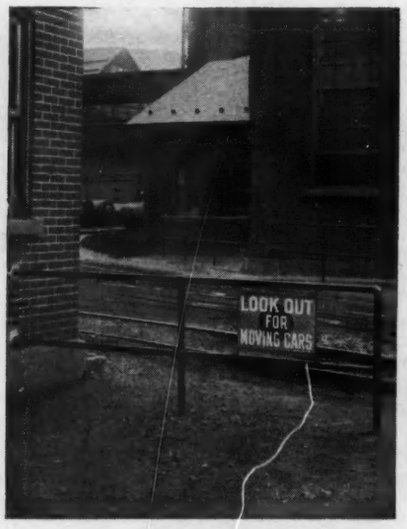
Give the Green Light • to War Assemblies

PROTECT the Employee and SPEED Production—

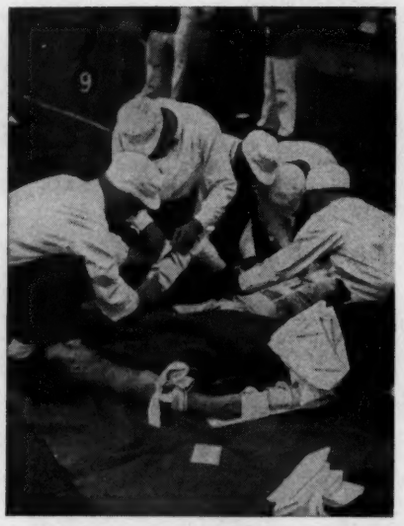
For 27 years Bethlehem has been waging war on the most dangerous saboteur of industrial production—accidents. Today, with the future of the nation so dependent upon top-speed production of war steel, we are stepping up the safety and first-aid effort on a widening scale.

First-aid instruction is being given to thousands of employees. Established safety practices are daily being intensified. More safety shoes, goggles, helmets, respirators and fire-proof clothing. More warning signs and flags to mark danger spots. More safety posters to keep workers safety-conscious. . . . No detail is overlooked which can possibly contribute to the fast, efficient, *safe* production of steel for America's ever-growing war needs.

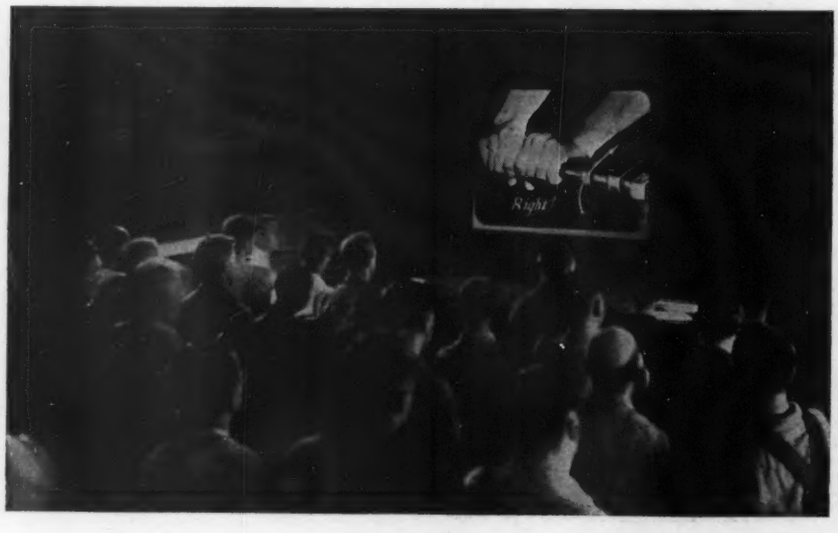
TOE-SAVING SHOES—Each of these five steel-reinforced safety shoes saved a foot from painful injury and kept one more worker on the job, fit, and able to continue doing his share to keep up the flow of Bethlehem's war production.



DANGER SPOT—But it's been rendered harmless by a short railing and a sign. Instead of stepping out blindly from the corner of the building, workers must cross the track at a point where they can hardly fail to notice an approaching train.



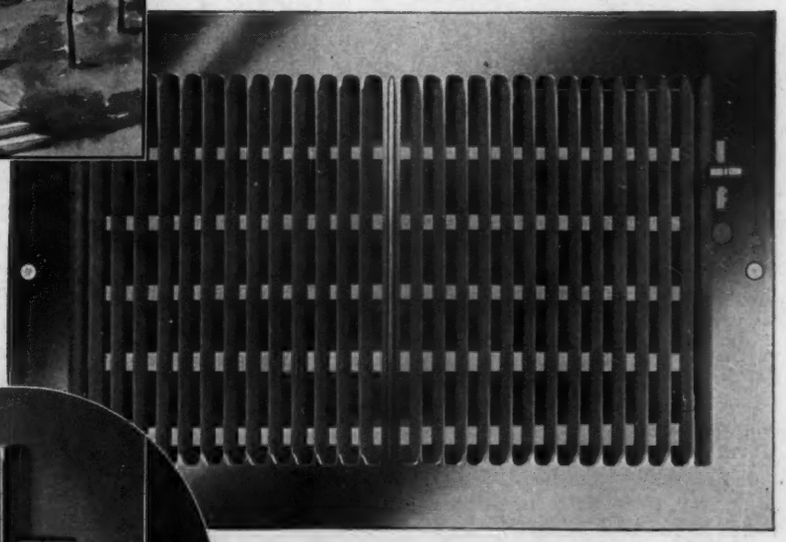
REHEARSAL—This team of first-aid men is giving treatment to an accident "victim" at one of Bethlehem's first-aid contests, held annually for many years. Thanks to this training, thousands of Bethlehem-trained first-aiders are constantly on the alert in steel plants and mines to prevent or treat industrial accidents.



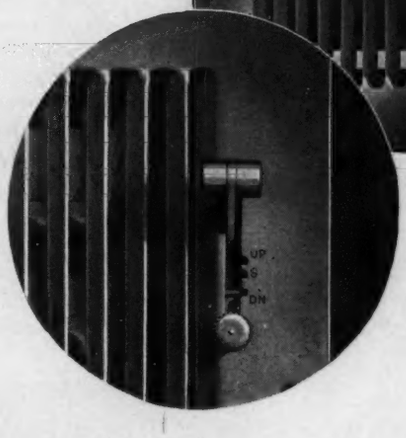
BETHLEHEM STEEL

SAFETY SCHOOL—By movies and lectures, Bethlehem employees are continuously being trained in the safest, most efficient methods of handling their jobs. Year after year, this education in the safe way to do every job goes steadily forward.

THE PLIAVANE REGISTER FOR WARWORKERS' HOMES



The Adjustiblade model of the Pliavane Register combines in a single unit the multiple features necessary to meet every air distribution problem. The adjustable face vanes and back blades provide four-way deflection of the air stream and at the same time effect even distribution of the air at uniform velocity over the entire face.



The back blades which deflect the air up or down are set in any desired position by the handy lever on the face of the register. When closed, the interlocking blades eliminate any possibility of air leakage, thus preventing the objectionable whistle which is a common fault of the ordinary register.

THE efficient and economical Pliavane is the ideal register for warworkers' homes and other large low-cost housing developments. The flexible face vanes may be individually adjusted to deflect the air sideways at any angle desired while the back blades at the same time instantly direct the air 20° upward, 20° downward or straight ahead.

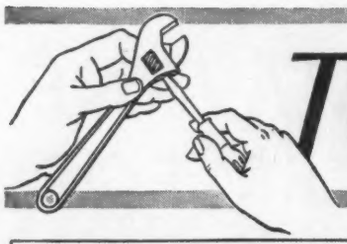
The Pliavane is also manufactured in the conventional single-valve design where sideways deflection is unnecessary.

Write for complete catalog.

TUTTLE & BAILEY, Inc.

NEW BRITAIN, CONN.

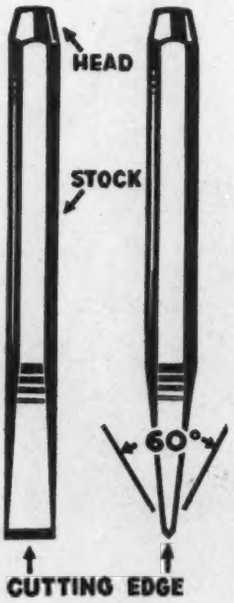
CHICAGO **PHILADELPHIA** **HOUSTON**



TOOL NOTES

Maintenance and Repair Suggestions to Prolong Tool Life

No. 5 THE USE AND CARE OF CRESCENT COLD CHISELS AND PUNCHES

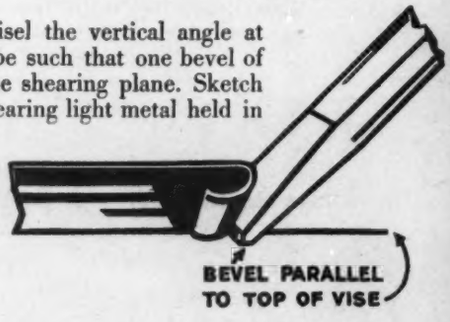


Crescent Chisels and Punches are forged from a high quality tool steel with cutting edges or points specially hardened and tempered. Heads are purposely left softer than the balance of the tool as a safety precaution to avoid chipping under hammer blows.

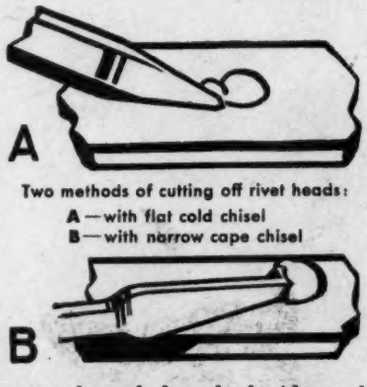
A few simple but important rules govern the use of cold chisels. First of all, cold chisels are designed to cut only metals softer than the tool itself. Hardened steel such as drill rod, hacksaw blades, etc., cannot be cut with a chisel. Use a chisel large enough for the job at hand. Use the center of the blade rather than just one point or corner. Always use a heavy hammer. Too light a hammer tends to burr the chisel head and does not sufficiently transmit the force of the hammer blow to the cutting edge.

Crescent Cold Chisels are ground for average use so that the angle between the two bevel surfaces is 60°. Although a sharper point may be used for soft materials, it is recommended that this angle be maintained in re-grinding. Don't overheat the point in re-grinding or the tool will lose its temper.

When shearing with a cold chisel the vertical angle at which the tool is held should be such that one bevel of the cutting-edge is parallel to the shearing plane. Sketch below illustrates a method of shearing light metal held in a vise so that the shearing line lines up with top of vise jaw. Note the slight horizontal angle at which the chisel is held . . . the point of the chisel is nearer to you than the head.



Ordinary cutting with a cold chisel involves the use of an anvil or solid metal back plate. Lay the piece to be cut on the anvil and, with chisel held perpendicular to the work, strike light hammer blows at first. When an initial groove has been started hard blows with a heavy hammer should follow. Usually the piece is cut part way through from both sides and finally parted by bending back and forth at the cut.



Two methods of cutting off rivet heads:
A—with flat cold chisel
B—with narrow cape chisel

Regarding Punches, when driving out rivets, pins, etc., use a size that almost fills the hole. A punch with too small a point may upset the end of a soft pin or rivet and make it sieze. If a punch wedges itself in a hole, don't attempt to loosen it by tapping sideways. You may bend or break the punch or force the hole out-of-round. Drive it backwards with another punch, or hammer back on the pin or rivet being removed.

In re-grinding punches, observe the same precaution to prevent overheating as mentioned for chisels above. Both Chisels and Punches are made in various designs or patterns for different uses. Always select the proper type for the job at hand. Your hardware dealer can advise you on this subject.

CRESCENT TOOLS
Give Wings to Work

CRESCENT TOOL COMPANY, JAMESTOWN, N. Y.

Vol. III

American ARTISAN

No. 10

Let's Houseclean—For Scrap

THE real trouble with the scrap campaign we have been engaging in is not a lack of appreciation of the seriousness of the need or a lack of patriotism, nor is it a squabble over prices paid—it boils down to the fact that many business men like furnace dealers and sheet metal contractors can't separate "scrap" from "materials" and "equipment."

So far as the furnace dealer and sheet metal contractors and sheets are concerned, we believe that Arnold Kruckman's analysis of the steel recovery program in this issue, just about wraps the package up in one neat bundle.

According to Mr. Kruckman, Washington wants any material you won't use in 90 days either turned in as metal recovery or sold as scrap. This includes any items you have fabricated, but won't use in 90 days.

It is beyond this usable material that the chief troubles are coming up. What you must know is, first, what is wanted and, secondly, what defines scrap.

Suppose you are a furnace and sheet metal shop and you have no usable materials which you won't cut up in 90 days. What else is there you can "scrap"?

Roughly any metal or rubber.

Immediately you will know you should dispose of all sheet scrap—whether galvanized or black iron. All those old patterns hanging on your walls, most of which you don't use once a year, are scrap. All the old furnaces and casings and pipes you can't use are scrap.

So are all the old cast iron or steel blocks, rails, stakes, mandrels, jigs, fixtures. So are all the old hand and bench tools and machines which you can't or won't use once a year. If they are usable, you may have to decide the issue on the basis of patriotism, but if the tools are broken or you know you won't use them or don't need to—scrap them.

You may hesitate to part with that old brake, or shear with which you began business, but if it has been gathering dust and rust these many years—scrap it.

Many shops used to operate their machines from line shafting—today most every machine has it own motor and the shafting hangs unused from the ceiling. Those shafts and pulleys are good scrap and you should get rid of it.

If you have lathes, drills, etc., you probably have drills, chucks, fixtures, machine parts which are too old, or are obsolete or were broken—these are scrap.

The amount of scrap you can probably dig out from under your benches and from your racks, shelves, store rooms can easily amount to tons—all badly needed.

Material should, of course, be segregated by types of metals—zinc, lead, iron, steel, copper, stainless, etc.; you'll get a better price for some than for others, so you'll want to separate.

This scrap campaign, many business men are finding, is the incentive for a much needed housecleaning. This is especially true in our industry where "junk" has been hoarded for years just because it had a sentimental value or "might" someday be used again. We can all do better work in a junk-free shop.

The importance of this house-cleaning should not need explanation, but we would like to point out how many of the companies who advertise in AMERICAN ARTISAN patriotically have been using their advertising pages to further this scrap campaign. It goes without saying that the housecleaning these companies have inaugurated is producing thousands of tons of scrap and the scope of the internal collecting programs has made a clean sweep through the plant.

Surely what the manufacturers of this industry have done can be adopted on a smaller scale by every shop—large or small. Anything metal you can't use is insurance against blast furnaces closing this winter.

Let's get in the scrap!

Interpretations, Amendments, Easements To Existing Orders

M-21-b May Be Amended

IN the editorial in the August issue we pointed out that order M-21-b permits a jobber to sell only 5 per cent of his quota of sheets on orders under A-1-a. This quantity—5 per cent—is not enough to permit our industry to carry out the repair and maintenance work we are expected to do under P-84.

On September 11 we sent a copy of this editorial and an explanation of our complaint to Iron and Steel Branch, WPB, and asked if any further consideration was being given this problem.

On September 19, Warehouse Unit, Iron and Steel Branch replied: "For your information, an Amendment, Number 7, to Supplementary Order M-21-b will soon be issued which will overcome certain of the objections which your editorial raises to the present restrictions of the Steel Warehouse Order."

We have not seen Amendment 7, but we believe consideration is being given the restriction.

◆

New Pricing Formula PR-204

IDLE or frozen materials sold under Priorities Regulation No. 13 of the War Production Board may be disposed of at prices computed f. o. b. present location, the Office of Price Administration announced September 16.

As originally issued, Maximum Price Regulation No. 204 (September AA, page 29) covering such sales provided that a seller's maximum price for such materials when sold in the form originally received by the seller was that established by any dollars-and-cents maximum price regulation applicable to the sale. Where no such regulation was applicable, the seller could charge the delivered price which his supplier could have charged.

This procedure is now changed. Amendment No. 1 to Regulation No. 204 (Idle or Frozen Materials Sold Under Priorities Regulation No. 13), effective September 16, 1942, now provides that idle and frozen material which is in the form originally purchased may be sold as follows:

1. If sold to a producer of the same or a similar material, the maximum price is any price that the seller and buyer agree to.

2. If sold to any other authorized buyer, the maximum price, f.o.b. the present location of the material, is determined by using the delivered cost, including all transportation charges that the seller would be permitted to incur for the material if purchased from his original supplier under the presently applicable maximum price regulation.

If the quantity being disposed of is smaller than that originally purchased, the seller must compute his maximum prices on the basis of the quantity which was purchased and not the quantity being sold.

If the seller cannot identify the quantity originally purchased, the quantity last purchased shall be considered as the quantity originally purchased.

Where the original supplier has no maximum price, the holder may use his actual delivered cost as his maximum price f. o. b. present location of the material.

◆

Drastic Cuts In L-41

DRASTIC cuts have been made by the WPB in the amount of civilian construction to be allowed without specific authorization under the provisions of a revision of Conservation Order L-41, effective September 7. The L-41 order placed all civilian construction under rigid control (May AA, page 30).

Types of construction have been reclassified, making distinctions within residential and nonresidential categories and reducing in most instances the amount of construction for which no authorization is necessary.

The new classes of construction established by the revision of L-41, with their former and present cost limits, follow:

Type	Former limit	Present limit
Residential	$ 500	$ 200
Multiple residential	500	1,000
Agricultural	1,000	1,000
Industrial	5,000	5,000
Certain types of commercial	5,000	200
Other types of commercial including highway, sub-surface and utilities construction	5,000	1,000

Included among the types of commercial construction reduced from $5,000 to $200 are buildings designed for use as clubs, lodges, associations, fraternity or sorority houses, auditoriums or assembly halls.

Also included are buildings designed for occupancy by not more than five establishments selling or dispensing goods, merchandise, food or drink, or providing services. In the latter group are small stores, restaurants, soda fountains, bars, etc. Large quantities of materials have been going into their construction under the provisions of the original order allowing up to $5,000 to be spent during any continuous 12-month period.

Multiple residential construction includes buildings designed to provide living space for more than five families or divided into more than five suites.

Industrial construction includes buildings designed for use in the manufacture, processing or assembling of goods or materials.

In every instance where estimated costs are under the established limits, the owner, before he may begin construction, must be able to acquire enough material to complete the project without priorities assistance. Furthermore, the project must not require the use of any material, on the site or off the site, to supply

electricity, gas, water, steam, telephone or sewage disposal service.

In the revised order repair work, *on which there is no limit*, does *not* include reconstruction or restoration of construction damaged or destroyed by fire, flood, tornado, earthquake, act of God or the public enemy.

There is no change in the original provision that residential construction damaged by fire, etc., after December 31, 1941, may be restored without authorization. Agricultural construction damaged in that manner after September 7 may also be restored in cases where the Department of Agriculture determines that immediate reconstruction is essential to the agricultural program. It is provided, however, that a regular application form PD-200 must be filed within 2 weeks of such determination.

Industrial and other restricted construction similarly damaged may be restored where immediate reconstruction is necessary for the prosecution of the war or protection of public health or safety. In such an instance a telegraphic report must be made to the WPB within 5 days, setting forth certain data, and form PD-200 must be filed within the next 2 weeks.

◆

Our Price Ceilings

LETTERS from readers indicate that many contractors believe that the fixed-price services we offer the public (furnace cleaning, for instance) are now regulated by Maximum Price Regulation 165 as amended.

This is not the case—today (October 5) only two services we commonly supply through our shops are ceilinged on prices charged the customer.

These two services are:

1—Oil burners burning number 5 oil or lighter—maintenance, rental, or repair of (except free service rendered in conjunction with the sale of oil).

2—Metal work, plating, replating, *welding* (shop work only and only for consumers other than commercial, industrial or governmental users).

These two services which are ceilinged as to price are covered in Manual No. 2 Maximum Price Regulation No. 165, Office of Price Administration.

All other services we offer will be ceilinged, probably, under another price regulation now being prepared to cover the services offered in the building construction and maintenance field.

Until this new regulation is issued, you can charge what you please for all services other than the two above.

◆

A C Equipment Further Restricted

PRODUCTION of additional types of air conditioning and commercial refrigeration equipment has been prohibited by WPB with the issuance of General Limitation Order L-38 as amended September 26.

The amended order also allows sales of specified types of equipment in the hands of dealers and manufacturers. These are in addition to equipment released for sale by the previously amended order.

Production of the following equipment is now prohibited, in addition to previous restrictions:

1. Non-mechanical water coolers, with an ice capacity of less than 25 pounds.

2. Refrigerated display cases of all types.

3. Low-temperature mechanical refrigerators with a net capacity of more than eight cubic feet, but not over 24 cubic feet, which are used for freezing and storage of food on farms.

All of the above items could be produced in restricted quantities under terms of the previously amended order.

Production of evaporative coolers with a capacity of 2,000 cubic feet of air per minute or less and ice cream cabinets not for use aboard ship is also cut off. Evaporative coolers rated over 2,000 c.f.m. and ice cream cabinets used on ship-board can be manufactured only for preferred orders.

Immersion (drop-in type) milk coolers for farm use are no longer restricted by L-38, but are still subject to provisions contained in L-26, as amended, which controls production of certain types of farm machinery.

Sales of the following items by producers to dealers or other persons are now prohibited, except for specified war agencies of these items among others:

1. Low-temperature mechanical refrigerators having a net capacity of eight cubic feet or less designed for the storage of frozen food or for the quick freezing of food.

2. Self-contained air conditioners (room coolers), and window-type air conditioners having a rated capacity of less than two horsepower or a refrigerating capacity of less than two tons. (ASRE Specifications.)

3. Evaporative coolers rated at 2,000 c.f.m. or less.

Previously, sales of only some of these items were restricted.

Dealers and other distributors can now sell without restriction the following items, regardless of when they were put in stock:

1. Self-contained air conditions (room coolers), and window-type air conditioners having a rated capacity of less than two horsepower or a refrigerating capacity of less than two tons. (ASRE Specifications.)

2. Evaporative coolers rated at 2,000 c.f.m. or less.

3. Low-temperature mechanical refrigerators having a net capacity of more than eight cubic feet but not over 24 cubic feet, to be used for the freezing and storage of food on a farm (Farm Freezers).

Previously, only certain of these products could be sold if they had been in the dealers' possession June 18, 1942.

◆

Steel Furnace Gauges

REPORTS construction Division, Engineering Branch, Corps of Engineers:

"This office does not consider it advisable to change existing specifications already approved by the National Warm Air Heating and Air Conditioning Association.

The minimum gauges of metal for coal-fired and oil-fired furnaces will be as follows:

	Up to 2.75 Sq. Ft. Grate	2.75 to 4.0 Sq. Ft. Grate and Not Over 294,000 BTU	4.0 to 6.0 St. Ft. Grate and Not Over 294,000 BTU	4.0 to 7.0 Sq. Ft Grate and Over 294,000 BTU	Grate and Over 294,000 BTU Over 7.0 Sq. Ft.
Head	8	8	6	4	3
Sides	10	8	7	4	3
Botton	14	14	12	12	12
Radiator	14	14	12	12	12

On Our Industry's Front

Timmis Resigns From WPB

RESIGNATION of W. Walter Timmis as Chief of the Plumbing and Heating Branch was announced September 17 by A. I. Henderson, Deputy Director General for Industry Operations. Mr. Timmis resigned to join the armed services.

Ronald Allwork, New York City, who recently had been appointed Deputy Chief of the Branch, was named Acting Chief by Mr. Henderson.

Before joining the War Production Board staff, Mr. Allwork was a specialist in the preparation of specifications data for building products. He has been associated with many plumbing and heating companies.

◆

Limitation Order L-174

Restrictions upon deliveries of manufactured gas for space heating. After September 1, 1942, except where otherwise directed by the Director General for Operations, no utility shall deliver, and no consumer shall accept deliveries of manufactured gas for the operation of any space heating equipment unless such equipment:

"(1) Was installed (or if converted from some other fuel to manufactured gas, such conversion was completed) prior to September 1, 1942, or

"(2) Replaces gas-fired space heating equipment of equal or greater capacity, or

"(3) Was installed prior to November 15, 1942, in a new building, and such equipment was specified in the construction contract, and the foundation under the main part of the structure in which the equipment is to be installed was completed prior to September 1, 1942."

◆

Fourth Quarter PRP Certificates

PRODUCTION Requirements Plan certificates for the fourth quarter of 1942 should be received by applicants by October 15.

The applications have been analyzed, the total estimated requirements have been balanced against available supplies and material, and the Program Adjustment Committee has made its recommendations for cutting back the requirements to balance the supply. Final processing of the fourth quarter Production Requirements Plan applications were under way September 22.

Certificates of those companies with major war contracts should have reached them by October 1st and all fourth quarter applications which were received on time should be returned by October 15.

In the meantime, the provisions of Priorities Regulation No. 11 for an interim procedure have been modified by Amendment No. 4. As before, companies which have not yet received their fourth quarter certificates may order up to 40 per cent of their estimated fourth quarter requirements for delivery in October. Amendment No. 4 provides, however, that they may not apply preference ratings before receiving their certificate to more than 70 per cent of their estimated fourth quarter requirements, and they may not apply ratings under the interim procedure to a greater volume of material than they actually put into production in the first two months of the third quarter —namely, during July and August of 1942.

◆

Changes In WPB Officers

REPORTS Chamber of Commerce of U. S.— Things are looking up at the War Production Board because Donald Nelson has now a compact top organization with specific and appropriate functions.

These recent important appointments to top places in WPB have been made: Ferdinand Eberstadt has left the Army-Navy Munitions Board to become a vice-chairman of WPB. Charles E. Wilson, president of General Electric Company, has become another vice-chairman.

Duties assigned these men are similar to those that would be made in the production department of most any company. Eberstadt will determine schedules and programs and will regulate the flow of materials to producers of war goods. Wilson has responsibility for seeing that production schedules are kept.

Eberstadt has a third job which actually will be handled by Ernest Kanzler, the man who was in charge of coordination of converting automobile plants to war production

Kanzler will benefit by the endless experimentation with priority and other procedures that have been a necessary but frequently irritating part of the war effort. There are now definite indications that such experimentation may be abandoned and effective production and planning mechanisms put into operation.

New Procedures

These mechanisms will include procedures for unification of the scheduling activities of war agencies and for allocation of materials to war plants. No longer should one ambitious procurement agency be found demanding early delivery for produtcs that will not be needed for six months while another needs those products desperately for immediate use.

Allocation procedures do not mean that the entire priorities system is out the window. Priority ratings will supplement allocations and will continue to be used to convey important information to war plants regarding the sequence of manufacture of finished products.

◆

War Housing Will Proceed

IT is now expected that the $600 millions additional for government built housing for war workers will be available this month. The President has signed the bill of authorization. These funds will supplement the more than a billion dollars already made available.

During the first half of 1942, government built housing for war workers amounted to $235 millions. During the same period, however, the volume of private residential building for war workers totaled $950 millions. This was equal to the 1939 volume of pri-

vate residential building, and compares with a peak of $1,200 millions for the first half of 1941. Obviously, the major part of the war housing program is being carried on by private builders. They must be relied upon to do a large part of the job that remains to be done, although as the government resorts more to temporary types of building for war workers the proportion of government building will increase.

◆

Furnace Shipments in 1942

FURNACE Shipments in Units for first 6 months 1942 compared to same period 1941. Taken from report of U. S. Department of Commerce. Covering orders booked based on information furnished by 100 Manufacturers. Orders booked are actually furnace shipments.

UNITS

Complete Winter Air-Conditioning Units, Including Warm-Air Furnace, Blower, Air Cleaner, Humidifier and Control Equipment	1st 6 Mos.	1st 6 Mos.	Increase or
Cast-Iron Furnace	1942	1941	Decrease
Coal-Fired	2,005	2,408	—15%
Gas-Fired	4,959	10,429	—52%
Oil Fired	625	1,075	—42%
Steel Furnace			
Coal-Fired	6,853	10,617	—35%
Gas Fired	11,781	19,470	—39%
Oil-Fired	10,244	20,159	—49%
TOTAL: *Winter Air-Conditioning*	36,467	64,158	—43%
Warm Air Furnaces Gravity			
Cast-Iron Furnace			
Coal-Fired	55,323	67,448	—18%
Gas-Fired	3,601	5,092	—29%
Oil-Fired	363	1,376	—74%
Steel Furnace			
Coal-Fired	23,171	29,218	—21%
Gas-Fired	9,187	15,887	—42%
Oil-Fired	2,780	3,778	—26%
TOTAL: *Gravity Furnaces*	94,425	122,799	—23%
TOTAL: *Winter Air-Conditioning and Gravity Furnaces*	130,892	186,957	—30%

◆

Military Can't Assign Priorities

AUTHORITY to assign preference ratings to individual Army and Navy contracts will be exercised after September 7 by War Production Board district offices instead of by the procurement and contracting officers of the armed services.

In order to exercise tighter control over the assignment of preference ratings, and to separate that function from the job of expediting particular parts of the war program, WPB will immediately send priority specialists to the various district offices with authority to issue preference rating certificates on the basis of approved directives upon recommendation by Army and Navy officers.

Heretofore, preference ratings have been assigned to military orders in the field by individual procurement and contracting officers on the basis of broad directives prepared by ANMB with WPB approval. There has been no careful accounting of the quantities of materials to which ratings were assigned in this way.

The new procedure is a step toward a much stricter system of handling the flow of materials to guarantee the most efficient possible use of "every ounce of scarce material and every critical subassembly."

◆

WPB Stops Production of Metal Doors, Frames, Shutters

PRODUCTION of metal doors, metal door frames and metal shutters for military or civilian use was prohibited by the WPB September 16 in Limitation Order L-142.

The new order halts all production except for fire doors meeting certain maximum specifications and for airplane hangar doors.

Manufacturers are permitted to fill orders received prior to the issuance of the L-142 order, provided that the door, frame or shutter is intended for a rated building or project already under contract, and provided that the door, frame or shutter can be completed in 45 days.

Manufacture of doors, frames or shutters on an A-10 or higher rating for repair and maintenance purposes is also permitted by the order.

Metal shutters covered by the order refer to means of closure in the side, floor, ceiling or partition of a building, shaft or tower, but not to windows or window shutters, which are covered by Order L-77.

◆

General Draft Plan

TO clear up some confusion that has existed as to the nation's draft policy in building up its armed forces to ten million men, Draft Director Hershey has outlined the long range procedure now in mind.

The supply of available single men, including those having dependents, will be exhausted this fall. Childless married men will mostly have been taken by next fall. Men with children will begin to be called about October, 1943. Local draft boards will be given considerable discretion in calling to service men from the different classes. To prevent drainage of men from war industries, the Army and Navy have decided, men given occupational deferment will no longer be permitted to enlist without clearance by their local boards.

◆

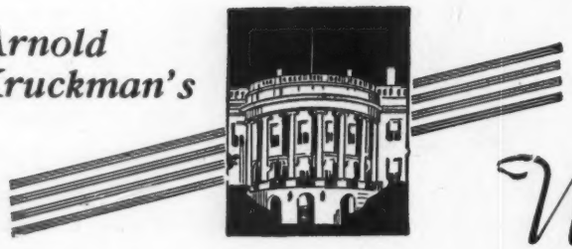
Tax Prospects

WINDING up its work on the new revenue bill, the Senate Finance Committee has decided to freeze Social Security payroll deductions at the present 1 per cent rate. If the provision stays in the bill, it will block the automatic increases that otherwise become effective January 1.

At the same time, the committee asked a subcommittee not only to study the possibility of compulsory savings, but to investigate further a pay-as-you-go

(*Continued on page 82*)

Arnold Kruckman's



Washington Letter

Steel Recovery Program

YOU are unquestionably one of the 200,000 fabricators or distributors who have recently received the letter from the Steel Recovery Corporation. And you have probably returned the questionnaire with the information about your inventory of steel and iron. This particular series of questions, springboard for a series of future questionnaires, was aimed more particularly at specific information about your stock of stainless steel. But this initial quiz is expected to bring out how many types of metal you have in your inventory. Generally speaking, the questionnaire asks about the Form and Shape and Rolling Treatment; about the Alloy Type; about Heat Treatment and Finish; Dimensions; about the Weight of your Total Inventory; the Weight of all Idle and Excessive Inventory; Weight required (to be used on War Orders) beyond 90 days; Date on which Material will be used; Stocks in your inventory over and above those Required on War Orders; and finally (referring to all types of stocks you have entered in an appropriate column), the Government asks you to commit yourself about your willingness to sell to the Government.

Types of Materials Expected

It is anticipated there will be 13 types of iron and steel found among the 200,000 recipients of the questionnaire. This means at least 12 or 13 more questionnaires will be sent out to secure specific and detailed information about inventories of each type of metal to each fabricator or distributor who has some of the metal. This obviously means some firms will receive all 13 questionnaires, and other may receive only one or two.

Apparently no one yet knows exactly how the 13 types are classified. Nine of the types have been defined: Stainless steel, primary and fabricated; carbon steel, structural; tool steels, knives and gauges; alloys, primary and fabricated; ferro alloys; carbon steel plates. It is emphasized, with thick black underlining, that they expect to dig out all steel and iron, light or heavy, tiny quantities or huge stocks, old steel, galvanized iron, hot and cold rolled black iron, automobile body stock, anything, everything, steel or iron, or made of steel or iron, that may be used for War without melting or which must be remelted to be used.

You can readily see this is really in a sense an extension of the scrap drive. Only, I think, the whole proceeding will be much tougher than any scrap drive we have had. Apparently no fabricator or distributor will have any standing before the men who direct this drive except as potential sources of steel and iron not needed now. You get the urgency of the note when you realize that they regard as excess, the surplus stock you have not used during 90 days of War work. For instance, you have 500 pounds of steel to do a job. In the standard period of 90 days you have used 300 pounds. Unless you can talk exceedingly well, and unless you have exceedingly sound reasons, you will be compelled to sell that excess of 200 pounds.

We need steel and iron desperately for the War, they tell you here. There are some few things that have been paralyzed by the lack of it, they assert. Therefore they insist the metal must be released for the need that is here, now, immediate, rather than hoarded for any perfectly honest potential need, even if it is a War need.

What Is "Idle" What Is "Excessive"

You have noticed they specify inventory as *idle* or *excessive*. It is useful to know the definition. An *idle* inventory is any stock of material or parts or fabricated equipment that have been frozen or prohibited for use by any of the various WPB or other orders. Such material may be used only by a special directive which is the Executive Order issued by officials other than the President. The Steel Recovery Corporation purposes to force these idle inventories into circulation as metal for needed War equipment.

An *excess* inventory consists of the material you have in stock you cannot use up in 90 days on "authorized uses"; or fabricated material you have in stock you cannot distribute to those who should use it within the 90 days period. No one knows any precise details yet because the whole working plan necessarily is still in the process of incubation.

Steel Plan Like Copper Recovery

But since the iron and steel recovery program apparently broadly follows the copper recovery program it is anticipated those who fabricate and distribute sheet metal products and all the allied products probably will benefit by the modification inherent in the maintenance and repair regulations. The formula, you know, permits the sheet metal man, who is defined as both fabricator *and* distributor, to retain a specified supply of copper for at least four months, as a working inventory. There is every reason to feel that iron or steel stocks, of any description, handled by readers of the AMERICAN ARTISAN, will be regulated under the Steel Recovery program in about the same way as their copper stocks were regulated under the Copper Recovery Corporation program.

You will notice the repeated stress on distributor and/or fabricator. This obviously means that the jobber in his normal functions as a jobber has little or no place in this program. Naturally if he owns or con-

trols a stock he comes under the jurisdiction of the program exactly as if he were a fabricator. If the jobber is able to shave a profit in handling materials in a transaction that involves A the owner, and C, the Government, he B, the jobber, is welcome to any profit he may be able to take. But since the prices will be very tightly controlled, it seems improbable that many deals of this kind could be made profitable.

As must be apparent, the object very frankly is to eliminate the jobber except in such transactions where he is actually the controlling and possessing principal. In essence, the Steel Recovery Corporation is the broker, the jobber, the in-between factor on behalf of the Government, and buys from those forced to sell, and sells this idle or excess metal to those who are authorized to use it. Steel Recovery Corporation has one major purpose: to force the metal into active, immediate War use.

How Recovery Corp. Will Work

Steel Recovery Corporation is what the Government politely calls a private corporation. It is difficult to determine where its privacy comes in, because it is organized by Government, it functions solely for Government, it is controlled by Government, and it uses Government funds in buying at prices fixed by Government. Legally it may be "private"; but actually you will find you will be safest if you treat its directions with the same respect you treat any other Government order. Its funds come out of the many-sided Reconstruction Finance Corporation. Papa Jesse Jones watches its career with the same cold eye that he focusses upon all other Government banking ventures.

Steel Recovery Corporation will act for the Metals Reserve Company, another of the intricate Government fiscal labyrinth, in order that the Government in this case be not required to rely upon a going private industrial concern like the American Smelting and Refining Co., which acted as its agent in several metal recovery operations. Officers of the Steel Recovery Corporation are George L. Stewart, president. Mr. Stewart is vice-president of Edgar T. Wards' Sons Company, steel distributors, Pittsburgh. Other directors are C. W. Nichols, vice-president, Metals Reserve Co.; John May, vice-president, American Steel and Wire Co.; N. J. Clarke, vice-president, Republic Steel Corporation; B. E. Kibbee, Sharon Steel Corporation; Richmond Lewis, president, Charles C. Lewis Co., Springfield, Mass.; Everett D. Graff, president, Joseph T. Ryerson & Son, Chicago; Lester Brion, president, Peter A. Frasse and Company, Inc., New York; Walter S. Tower, president, American Iron and Steel Institute, New York; Walter S. Doxsey, president, American Steel Warehouse Association, Cleveland. The headquarters have been established in Pittsburgh.

Actually the headquarters are located in the offices of Thornton W. Stokes, Chief, WPB Steel Recovery Program, at 5835 Baume Boulevard, Pittsburgh. The real work is done by the Pittsburgh personnel and the regional personnel of the WPB. Their allegiance and responsibility, through Mr. Stokes, head up to the WPB Inventory and Requisitioning Branch which lately has changed its name to the Materials and Redistribution Branch. This shift in nomenclature came with the shift in headship of the Branch. E. A. Tupper, Chief of Inventory and Requisitioning, became a "consultant" in the Materials and Redistribution Branch, and Col. Charles R. Baxter, Ordnance Department, U. S. Army, became Chief of the Materials and Redistribution Branch.

Baxter's appointment is significant because it is part of the militarization of WPB. It is of interest to you to know that many other military officers are expected to take over key posts in WPB, following Ferdinand Eberstadt, the New York banker friend of Undersecretary of War Patterson. Eberstadt, World War I veteran, knows exactly what the armed services want. He has been chairman of the Army and Navy Munitions Board ever since we went to War. He is now Deputy Chairman of WPB in charge of directing the flow of materials.

"Priorities" Will Be Abandoned

It also is part of this broad program that priorities, admittedly a dead loss, will gradually be wiped out, and allocations will take their places. The plan seems to be to follow the British program of issuing a book of warrants with each contract. The warrants may be cashed for exactly the quantity of material allocated to the performance of the contract. If you cannot do the job with the supply of specific materials allocated to your credit, you simply are out of luck. All this obviously has a close relation to the Steel Recovery Corporation program. Army sincerely thinks the allocation system is the only sound method of insuring definite supply of materials; and to have an assured supply of materials it is necessary to obtain control over all essential materials. It is pointed out that at this time no one really knows how much steel and iron is held collectively in this country as idle or excessive inventory.

When the 200,000 questionnaires are returned to Pittsburgh they will be "processed." This means WPB will tabulate the data and will know how much of each of the 13 types of metal are available; in what form, raw or fabricated, they may be obtained; where they are located. This will enable WPB to determine how much fabricated material may have to be remelted; how much may be used in the form in which it exists. WPB has a list of those users with a rating of A-1-k, or better, who are entitled to purchase the steel or iron fabricated or otherwise. If the owner of the idle or excess inventory is not able to find such qualified purchaser, within or outside the seller's region, the WPB, as part of the Steel Recovery program, will bring the owner and the potential purchaser together. If the owner of an inventory is unable to find a buyer, or if he cannot do business with those whom the WPB or Steel Recovery Corporation bring to him, the Steel Recovery Corporation forces the issue by buying the inventory itself.

How Much Will Be Paid

This obviously brings up the question of prices. The purchasing price schedule, by types, quantities, sizes, gauges, finishes and metallurgical characteristics, and by location, is now the headache of a combined committee composed of representatives of various WPB and OPA and Metals Reserve agencies, who are striving to produce a workable schedule quickly. There is not yet even a tentative schedule at this writing. If the Government, through the Steel Recovery Corporation, requisitions and buys the inventory, it sets its price, usually, by offering a little less than the lowest price on carload lots on a certain date. Small lots and certain fabrications, are equilibrated as it were, by allowances for nominal extras.

In the past it was found that some victims of the

(Continued on page 88)

Job Recording System For Operations Under Price Ceilings

By Arthur Roberts

UNDER price-ceiling regulations, you cannot be penalized if your records were inadequate during March or before and you can't do anything about changing them now. But you *may* suffer loss and penalty if you do not keep adequate records from now on.

To help the sheet metal contractor and warm air dealer comply with the law and earn a profit on repairs and service, we offer this job recording system, which is economical, takes little time, will simplify the costing of repair work under ceilings, whether you estimate or use flat rates. The form also enables you to check readily with March base-period records to keep your flat rate prices as per March ceiling prices and estimates computed as per the March pricing method, thus assuring compliance with OPA regulations and no penalties. From our examination of the recording systems used by many sheet metal contractors and warm air dealers in the east, we feel sure that many are heading for penalties unless they keep their job records in better shape, hence, the system offered here should be useful.

Prepare job tickets on shop work in duplicate, one copy for the journeyman, one for the office. Notice that this form is an estimate and completed job record combined. Number these forms consecutively, using code letter A for the office copy and X for the copy given the journeyman. On the form given the journeyman, do not show estimate figures on recaps thus keeping your costs confidential. On the A copy, fill in estimate figures or flat rate. On the X form, the journeyman enters labor hours, the date and hour the job is completed, the materials used, signs his copy and returns it to the office, where estimated figures are transferred from the A to the X form, consolidating the record. File the A forms (estimates) numerically.

The recaps at the bottom of form X provide ready reference to show the estimated profit versus actual and are an accurate means of determining how much you lose or gain on a job. Of course, your selling prices must be geared to the top prices charged in March for the same or similar services. If your job records show that you are not making money at these prices, you must take action to cut costs somehow. You can't go on losing money. But first, you must know WHERE you are losing money and that requires a detailed description of every job such as this form provides.

Besides the listings "invoice" and "journal", enter the date the invoice is sent to the customer. If paid immediately, a cash sale, enter the date beside "Paid" and the journal page beside "Journal", which is the book that records the original entries in a double-entry bookkeeping system. Record plus sales of "Accessories" and "Price", the peak price paid per labor hour in March, the "Overhead Percentage" figured on estimates in March and whether this percentage was computed on "Sales," "Prime Cost" or "Labor Cost", information that will enable you or an OPA auditor to determine quickly whether you are selling merchandise and flat rate service in accordance with March ceilings and whether the estimate shown on the job record is using the same pricing formula as your March estimates.

The same form may be used on service calls where flat rates are charged. In this case, designate the form with the code letter "H". Under "Description of work done", enter "Home Service Call", and the charge at the bottom of the form beside "Flat rate". Make only one copy, give to journeyman, who enters the time spent going and coming from the job, "Accessories Sold" and "Price". Small supplies need not be figured on any jobs. They are charged under overhead. File the "H" forms separately.

The usual procedure on flat rate service calls is to have the journeyman make minor adjustments or repairs but if the job runs into money, he contacts the office for an estimate or gives the customer a flat rate authorized right away. In some cases, the regular service call charge is by-passed if the customer buys a major service or repair. Warm air dealers have found it profitable to use this procedure on coal stokers, oil burners and air conditioning equipment.

If this form is used on home service calls, it provides a means for determining the time spent on the average call for check-up against the price charged for call service at flat rates. You cannot increase the flat rate over the March peak for the same or similar service, but this information will help you decrease costs if profit is negligible, by bettering routing of calls, by utilizing means to increase the efficiency of journeymen on repairs.

Job tickets should be made out on all service calls. The straight run of heating repairs are made in the home but sheet metal contractors do considerable shopwork. Use the code letter "H" to designate repairs made in the home, "S" for

ARTHUR JOHNSON

Warm air dealer—Sheet metal contractor

Name — Date
Address — Phone
Type job — Name equipment
Old or new customer — Job completed

Description of work to be done

Materials estimated | *Materials used*

Totals

Labor estimated | Labor used on job — From — To — Hours

M
T
W
T
F
S

Totals

Recap of estimate

Labor .....
Materials .....
Job expence .....
Overhead .....
Total over-all cost.....$———
Selling price .....
Profit on job.....
Flat rate charged.....
March 1942 ceiling price.....

Recap of completed job

Labor .....
Materials .....
Job expence .....
Overhead .....
Total over-all cost.....$———
Selling price .....
Profit on job.....
Loss on job .....
Differential .....

Invoice———— Paid $———— Journal———— Journeyman————

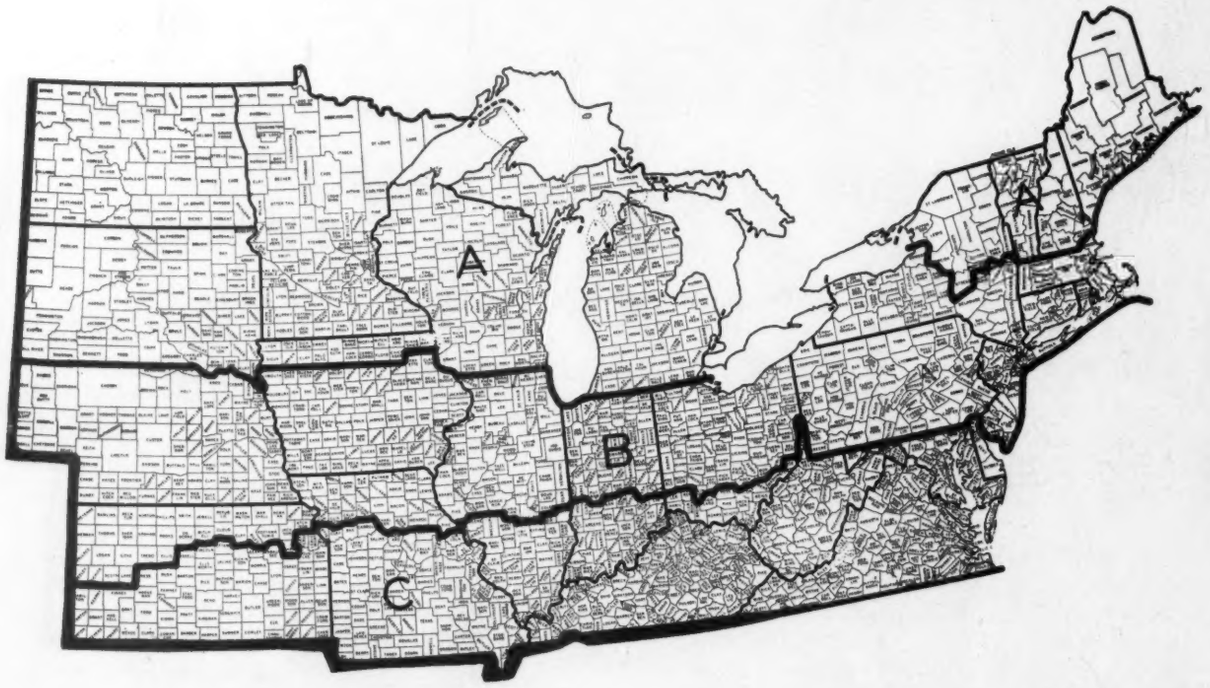
Accessories sold———— Price $———— Journal————

March wage per hour $———— Overhead %———— Sales———— Prime Cost————

Labor Cost ———— (Compare March peak prices and pricing method with those shown on this job record.)

shop repairs. File separately. If the journeyman is authorized to give flat rates and do major work at the home, a job ticket showing materials and labor used with a description of the work done is filled out and brought to the office, where it is filled in, recapped and filed. The journeyman, under such circumstance, should carry a few forms with him. Segregation of various classes of service and repairs by code letters enables the contractors and dealers to analyze figures on home service, major, minor repairs, flat rates and time-

(*Continued on page 87*)



The Fuel Oil Rationing Program

As of October 5, the fuel oil rationing program so much discussed lately stands thus:

1—All users of oil for heating in 30 states (see maps) will be rationed.

2—Coupon rationing will be ready and will be placed in operation about October 15.

3—Until October 15, or whenever coupons are ready, oil users are expected to do these things:

a—Fill tanks up to 275 gallons or to capacity if tank holds less than 275 gallons by October 1. If users can't afford to fill or can't get oil by October 1 to fill tanks, they will not be penalized.

b—Obtain from the oil dealer the amount of fuel used last heating season.

c—Measure each room to get the square feet of floor area in all heated rooms.

4—If possible convert your oil burning system to coal burning. (Complete denial of fuel oil for heating apartment houses, commercial, industrial and institutional establishments which possess the facilities to convert to coal was announced September 20.)

5—In general, the aim of the rationing program is to reduce the total consumption of fuel oil by 33⅓ per cent. (Earlier announcements said 25 per cent.)

6—Home owners will be expected to get along with 65 degree indoor temperatures this coming winter.

7—Home owners who have insulation, storm sash, weatherstripping will be awarded for their foresight by getting a smaller reduction in their fuel supplies than will the owner who "heats all outdoors."

8—A formula has been prepared by which local rationing boards will determine how much oil each owner gets.

Determining Weather

First of all, the 30 states affected have been separated into four thermal zones on the basis of *normal* degree days for each area. These are shown on the maps as Zones A, B, C, D. Secondly, each of the zones has been divided into five time Periods of approximately equal degree days so that the fuel needs will be about the same in each period. For example, Zone A has these five periods—Period 1, up to November 29; Period 2, Nov. 30 to Jan. 6; Period 3, Jan. 7 to Feb. 8; Period 4, Feb. 8 to March 17; Period 5, March 18 to Sept. 30.

Coupon System

The coupons will be numbered from one to five to identify the coupon with the five Periods. Coupons for each Period will become invalid after the expiration of the date of the Period with the exception of a provision for advanced and delayed use explained later.

Space heating coupons will have indefinite value. Coupons will be expressed in terms of units. They will have two denominations—a one unit size and a 10-unit size. This use of indefinite value coupons makes it possible to periodically adjust the gallonage value of each coupon for changes in supply or weather. (But the change in value will become effective only in the following period.) Thus, if Period 1 in Zone A is unusually cold the unit values of each coupon to be used in

Period 2 will be increased to get more oil per coupon.

This adjustment wouldn't be worth much if it meant that an owner used up all his oil in Period 1 five days before Period 2 begins and so couldn't have any heat until Period 2. So the advance and delay clause mentioned works like this: The advance use of Period 2 coupons can be made in Period 1 during the last 12½ per cent of the Period 1 degree days time. Or if Period 1 is warm and there is oil left over, Period 2 coupons need not be used for the first 12½ per cent of Period 2. And so on for all periods.

Fuel Oil Requirements Formula

The fuel oil requirements formula which will determine how much oil an owner gets is based upon the floor area of the space heated, the temperature of the locality (degree days as explained above) and a constant which establishes a ration range.

First we'll give you the formula and then the explanation.

The formula for a free-standing house is:

$$F = \frac{AD}{K}$$

In which: F equals the fuel requirements; A equals the square feet of floor area in the heated rooms; D equals the normal degree days of the locality; K equals a constant which defines the overall thermal efficiency of the burner, heater and house.

Here is how the formula will be applied:

A percentage of past fuel consumption and a floor area heat-loss form formula will both be used as guides by local War Price and Rationing Boards in determining individual rations.

One function of the floor area heat loss formula is to classify houses according to their thermal efficiency by setting a ration range which defines normal burner and insulation efficiency. Houses within this range are cut 33⅓ per cent from adjusted normal consumption. Houses more efficient than normal may be cut between 15 and 33⅓ per cent, depending on their efficiency. Houses less efficient than normal will be cut more than 33⅓ per cent. The plan makes thermal efficiency imperative and penalizes the inefficient.

The first figure needed for using the heat loss formula is the dwelling floor area of the house to be heated. This figure will be supplied by each applicant when he registers for his oil ration. He will get the figure by measuring each room to be heated, and by multiplying the length of each room by its width.

The Degree-Day Factor

The second figure involves a combination of the calendar, the thermometer and the thermostat to arrive at a degree-day figure for the house. A degree-day is the number of degrees, in one day, by which the outside temperature must be raised to produce the 65 degree temperature for your house.

Here is how a degree-day is computed. On the day that the temperature on the average falls to 30 degrees your furnace has to add 35 degrees to the inside temperature of your home to produce the 65-degree level. This, therefore, is a 35 degree-day. A solid 10-day period of exactly that same weather would mean you must spend 350 degree-days of heat to maintain 65-degree heat in your home.

It will not be necessary for each householder in applying for a ration to compute degree days. The OPA Fuel Rationing Division has just completed a careful study of United States Weather Bureau reports covering every section and locality in the whole rationed area for the past 43 years. On the basis of these reports the normal degree days for each section have been worked out, and the degree-day figure for a normal season established.

Two Constants Bracket Efficiency

Third figure (the K) in the formula is known as a constant. Actually two constants, a high and a low, will be used to establish a ration *range*. Any ration within this range would be presumed as sufficient to maintain a 65 degree daytime temperature for a house of *standard* heating efficiency. Therefore, by applying two different figures as constants to the formula, maximum and minimum rations required to heat the house will be determined.

The two constants fixed by OPA for all zones are 7,300 and 5,600. The higher figure will represent low heating efficiency for the house, the lower figure high efficiency through good insulation and economical oil burner performance. The constants reflect efficiency factors that can reasonably be brought to standard (insulation, clean burner, combustion, storm windows, etc.), whereas the range is provided to cover variables that cannot be accurately combated.

How to Work the Formula

Here is an example to show how the formula will establish the ration range:

The floor area of the house is 1,800 square feet. The degree day figure for the zone in which it is located is 5,000. The two constants, as stated above, are 7,300 and 5,600.

In the formula the floor area is multiplied by the degree days and the product divided by the Constants. The result is the ration range in gallons of fuel oil. Thus, the range in this case will be from 1,607 to 1,233 gallons.

After this range is determined the exact ration to be issued will be computed on the basis of a percentage of last year's consumption.

The amount of fuel oil used in the house last year adjusted to normal was 2,400 gallons. Last year's consumption is adjusted to normal by comparing last year's degree days with normal degree days in each subzone and making a proportionate change in gallonage of fuel. Two-thirds of this amount is 1,600 gallons.

Since this amount is within the ration range it will become the exact base ration to be issued.

Whenever the two-thirds figure falls below the ration range, an adjustment will be made to raise the ration issued to the floor of the range, or to 85 per cent of last year's consumption figure—whichever is lower.

It will not be necessary for local rationing boards to work out the formula mathematically for each applicant. OPA will furnish tables listing the range floors and range ceilings for houses of given sizes in each of the thermal zones into which the rationed area has been divided. The range can thus be determined at a glance.

Rationing Boards will then determine the exact ration by applying the last year's consumption figure to be found on the householders application

We suggest that readers study the above explanation of the formula carefully. The formula means that few users are going to get more than two-thirds of the amount of oil used last year. If he has a leaky house and a poorly adjusted burner he is going to fall outside the K factor range and will get less than two thirds of the oil he used last winter.

Consider what this means. That owner used more oil than he should have last winter because he wasn't comfortable. This winter he is going to get less than two-thirds of the oil he used last winter and he's going to be cold. That owner will have to insulate, put on storm sash, make his burner more efficient.

He's going to have to do these things or suffer. We suggest that readers study Professor Konzo's article in the September issue where he shows that insulation in the ceiling alone reduces heat loss only 14.5 per cent—and this owner has to reduce 33⅓ per cent. So this owner will have to add storm sash (reduces heat loss another 31 per cent). We also suggest a study of Professor Konzo's article in this issue where he explains the *actual* savings obtained by adjusting the burner, cleaning the furnace, using automatic control and other means. Note that he says these are *actual* savings not *claims*.

To prevent actual suffering in cases where householders can't find the money to make these improvements or where there is sickness or infants or old people in the house, local rationing boards will be permitted to make exceptions to the formula.

Commercial, Industrial Buildings

After much consideration it has been decided that commercial, industrial, institutional buildings present an administrative problem so complex that the program based upon the rationing formula just couldn't be enforced. So for the present at least the commercial and institutional establishments will be rationed on the basis of a uniform percentage of past use. The announcement of this decision from Fuel Rationing Division doesn't say just what the reduction percentage is to be, but we assume 33⅓ per cent.

Lastly, what to do until the coupon books are issued is explained thus:

Sales of fuel oil to all consumers within the 30-state rationed area between October 1 and the start of the coupon credit system is set up in Amendment 4 to Limitation Order 56.

The credit system provides that every consumer, dealer, and supplier who receives deliveries of fuel oil for any purpose must execute a written promise to surrender to the seller ration coupons for the number of gallons of fuel delivered as soon as the coupons are available.

Consumers must redeem these written promises, or coupon notes within 15 days after the OPA Fuel Ration Order is issued. OPA assumes that by that time all consumers will have received their rations from a local War Price and Rationing Board and can, therefore, redeem their notes.

All dealers and suppliers of fuel oil, who are required to execute their own coupon notes, must also redeem their notes within 15 days after the date of the OPA Order, and will do so with the coupons they get from their customers. Since every transfer in the trade will be covered by a coupon note beginning October 1, the redemption of the notes will result in a retroactive "flow back" of coupons and will provide a basis for complete audit and control of the trade by OPA, under its rationing regulations, for the entire month of October.

RESIDENTIAL AIR CONDITIONING

SECTION

DEVOTED TO HOME AND SMALL COMMERCIAL AIR CONDITIONING

These MUELLER All Cast-Iron Defense-Housing Furnaces

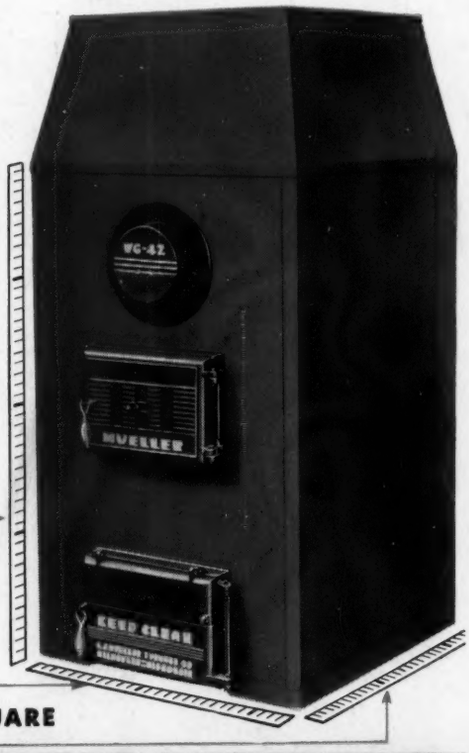
— high output efficiency
— with standard return-flue radiator . . .

WG-42 (GRAVITY)
Capacity 42,000 B.t.u. output at register. All cast iron. Equipped with bonnet. Rocking and dumping bar-type grates on both models.

Satisfactory heating efficiency and performance are highly important to your defense-housing customers. • That is what you are delivering, when you install these Mueller defense-housing furnaces . . . because they *are* complete standard furnaces in every respect — following the proved principles of return-flue radiator design which have built your business and ours. • Moderate in cost — no need to take a chance with makeshift designs. Compact (note dimensions) — good-looking — up to usual Mueller standards in every way. Get them from your nearest Mueller distributor, or write *L. J. Mueller Furnace Co., 2010 W. Oklahoma Ave., Milwaukee, Wis.*

D-25

WR-72 (FORCED AIR)
Capacity 72,000 B.t.u. output at bonnet. All cast iron. Equipped with blower. Special plenum 39½" high, with cap, available as extra equipment; extends to ceiling height of 7'4".



ONLY 46½" HIGH

ONLY 28" SQUARE

MUELLER *Milwaukee*

HEATING AND AIR CONDITIONING

Keep 'em Heating

Maintaining existing heating plants in highest possible heating efficiency and advising the owner on what he can do to conserve fuel is the patriotic duty of every furnace dealer. These "Keep 'em Heating" articles will summarize the latest technical and merchandising thought of the industry.

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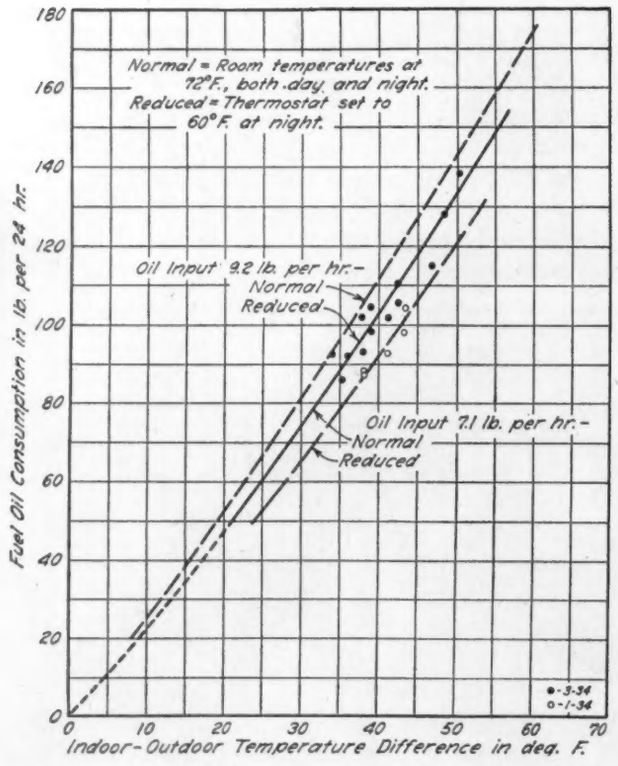


Fig. 19—Fuel consumption with reduced room temperatures at night.

in order to prevent all of the fuel from burning out before morning.

Don't Overlook House Rate of Cooling

The tests reported were made in an uninsulated house, in which the rate of cooling of the structure would be faster than if the house were insulated. Even so, it was found in average heating weather in Urbana, Illinois, when the outdoor temperature was 38 deg. F. that approximately 6 hours' time was required for the house temperature to fall 10 deg. It can be shown from this rate of cooling that calculations of fuel savings based on the assumption that the house temperatures will drop to 55 deg. F., or 50 deg. F., or some lower temperatures may be entirely in error. The temperatures in a house will only drop at a rate which is characteristic of the house. If the given house will only cool down to 60 deg. during the night, lowering the thermostat setting to 40 deg. F. will not increase the rate of cooling. Hence, any calculated savings based upon how much fuel will be saved by progressively decreasing the setting of the room thermostat should be accepted with caution.

In the case of gas-fired plants it may not always be advisable to recommend night setbacks in temperature. In some localities, in which the gas mains are ample to take care of normal loads even in the severest weather, the sudden demand load in the early morning hours when all the furnaces were turned on full blast has resulted in a serious drop in gas pressure in the mains. Obviously this is a local condition, and experience will indicate whether or not the mains are adequate to take care of these overload demands.

Any saving in fuel resulting from night setback in temperature may be wiped out entirely, if the combustion process during the morning pick-up period is uncontrolled and allowed to run wild. In the case of oil-, gas-, or stoker-fired plants the combustion rate is limited by the metering equipment. Such is not the case with a hand-fired plant. If drafts are sufficient, and no check is placed upon the combustion process, the combustion rate may become so high that the equipment is damaged and fire hazards are increased. Obviously, if a high-limit bonnet control is provided, the bonnet temperature may be kept within reasonable limits. If the hand-fired plant is not thermostatically controlled, the homeowner should be definitely instructed to bring the house temperatures up to normal in gradual steps, rather than in one sudden increase. There is no economy in saving a little coal by banking the fires at night, if in the morning hours the furnace is abused by too intense firing.

Decreasing Rate of Oil Input

The flue gas losses from an oil-burning furnace are dependent upon both the completeness of combustion, as measured by the CO_2 content of the flue gases, and the temperature of the flue gases. For every 30 degree change in flue gas temperature, there will be approximately 1 per cent change in the combustion efficiency. On the other hand, for each change of 1 per cent in the CO_2 content there will be approximately a one per cent change in the combustion efficiency. In a great many installations, an increase in the CO_2 content of only 3 or 4 per cent is about all that can be accomplished without running into possibilities of a sooty flame. In this connection the furnace installer should realize that under no conditions should an oil burner be allowed to operate with a sooty flame. Hence, if a choice has to be made between a 6 per cent CO_2 accompanied by a clear flame and an 8 per cent CO_2 accompanied by a dirty flame, the former adjustment should be selected. A dirty or sooty flame may be accom-

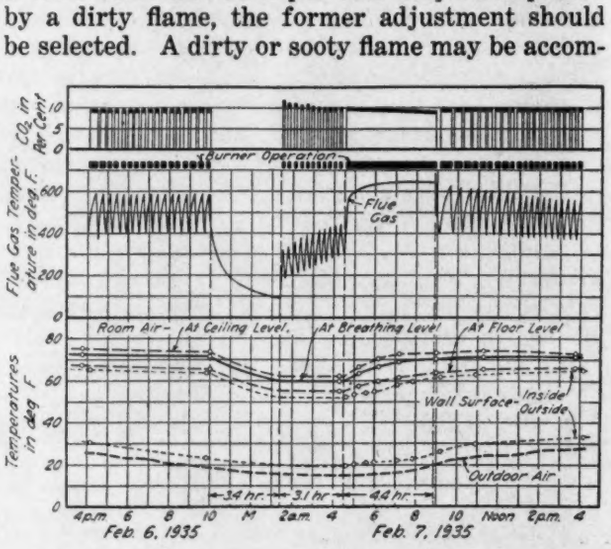


Fig. 18—Log of warming-up test for conversion unit.

panied by unburned combustibles and may also tend to coat the heating surfaces with soot, neither of which is an advantage. In a great many cases, therefore, unless extensive changes are made in the burner or in the combustion chamber brickwork, the possibilities of making enormous change in combustion efficiency merely by increasing the CO_2 are somewhat limited.

Although neither CO_2 nor flue gas temperature can be considered separately, nevertheless in many cases a greater possibility exists of reducing flue gas temperatures than there is of increasing the CO_2. If both factors can be improved simultaneously, maximum results towards fuel economy will be obtained. Lower flue gas temperatures can be obtained by any changes which increase the rate of heat transmission to the circulating air or by any changes which decrease the rate of combustion. In some conversion jobs in which the flue gases do not come into intimate contact with the heating surfaces some improvement can be effected by the use of internal baffles which deflect the combustion gases towards the heating surface. In the case of circular radiator furnaces, this has been done by some installers, by the placement of loose firebrick inside of the radiator to force the gases against the metal surfaces. Some advocate the use of automatic draft regulating dampers in the smokepipe to reduce the excess air carried into the furnace and also to allow more time for the gases to transmit heat to the metal.

Many Old Nozzles are Oversize

In many of the conversion burner installations more than about five years of age the burners are definitely oversized. Up to a few years ago the smallest burner nozzles in use were 1.5 gallon per hour capacity or larger. In recent years, with improvements in nozzle oil filters and in cleaner fuel oil supply, nozzles with oil imputs as low as 0.85 gallons per hour are in use. Since an oversized nozzle with its corresponding high rate of oil input results in high flue gas temperatures, it seems that the most logical procedure is to check on the size of the nozzle required for the heat loss of the house. This is particularly important in installations having nozzles larger than 1.5 gallons per hour.

As a rough value for estimating work, you may consider that for each 100,000 B.t.u. per hour heat loss from the house, one gallon of oil per hour is required. Burner catalogues frequently recommend an excess capacity of 25 per cent in oil input rate in order to take care of pick-up demands. It should be realized that with a smaller excess capacity, lower flue gas temperatures will be obtained, so that in general a value less than 25 per cent would be advisable. The homeowner should be advised that with a lower rate of oil input the oil burner will operate for a longer period of time, but that the heat thrown out of the chimney is reduced, so that the net result will be a smaller fuel bill.

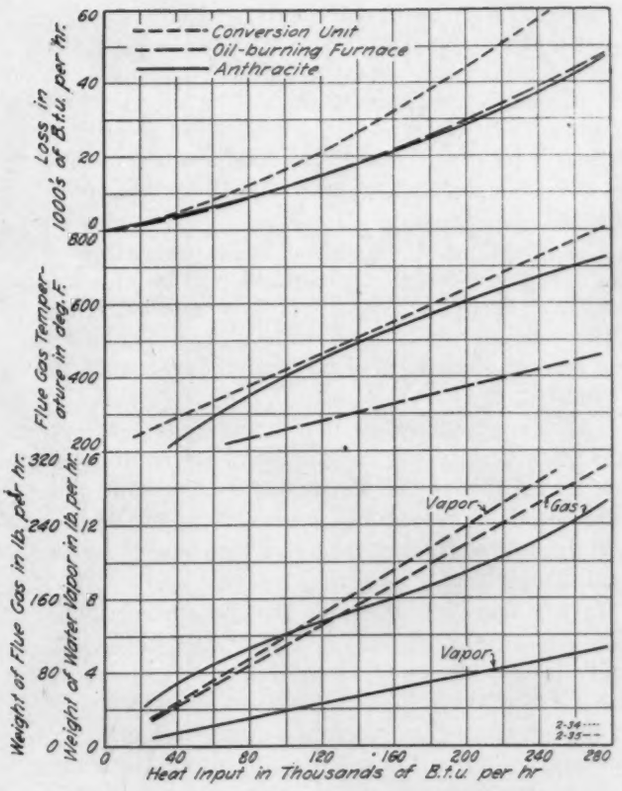


FIG. 15. FLUE GAS LOSSES FOR VARIOUS HEAT INPUTS

If major improvements in the house, consisting of insulation or storm sash, have been made after the original burner nozzle was installed, a smaller oil nozzle will be required. Assuming that the oil input rate has been markedly reduced, the installer should check the combustion process to assure himself that a smaller combustion chamber is not required.

The heating contractor will find two bulletins of especial interest in this connection. A rapid method of calculating heat losses by the approved method is presented in the Gravity Manual obtainable at a cost of 40 cents from the National Warm Air Heating and Air Conditioning Association. Charts showing flue gas losses for all types of fuel are given in Circular 44, which is obtainable from the Engineering Experiment Station, Urbana, Illinois.

Maintaining Clean Heating Surfaces

The accumulation of soot on the heating surfaces of a boiler or furnace tends to decrease the heat transmission from the hot flue gases to the circulating medium. The tests conducted at the Bureau of Mines (Report of Investigations 3272) by Nichols and Augustine have indicated that the decrease in heat transmission and efficiency caused by the soot formation on heating surfaces was smaller than ordinarily believed to be the case, and much smaller than the decrease in thermal conductivity of soot alone.

The following excerpts are reprinted from the conclusions stated in the Bureau of Mines Report:

"(1) The tests showed that in round, cast-iron

boilers with three intermediate sections—that is, a ratio of effective secondary to total heating surface of about 0.4—operated at the average rate for a heating season the insulating effect of deposits of soot decreased the heat absorbed by the boilers 2 to 7 per cent of the heat made available by the fuel, depending upon the thickness of the deposit.

(2) The losses, expressed as a percentage of the coal burned, will be less and will be approximately proportional to the overall efficiency. Thus, with 60 per cent efficiency, about 1¼ to 4¼ per cent of the coal will be wasted because of the insulating effect of the soot.

(5) These values do not include the waste of fuel that will result from incomplete combustion due to insufficient draft caused by the soot clogging the passages or flue, which may, and usually will be, much greater than the loss caused by the insulating effect."

In a stoker-fired furnace the fly ash accumulation on horizontal flue passages may be exceedingly large. In the Research Residence some of the horizontal passages were covered with a layer of fly ash from three to four inches in depth after one season of operation. Such accumulations may have a much greater effect in reducing efficiencies than the relatively thin layers of soot referred to in the report. Soot and fly ash removal should be a regular part of the annual inspection of the furnace, particularly in those cases in which the chimney draft is weak.

Control of Combustion Rate

Most of the oil- and gas-fired furnaces are equipped with thermostatic control equipment that essentially control the combustion rate, but the proportion of hand-fired plants that are similarly equipped is unfortunately small. The uniformity in house temperatures resulting from the use of controls is commonly understood. Homeowners are not acquainted with the fact that by proper thermostatic control, the peaks and valleys in the combustion process are ironed out so that the furnace is subjected to far less thermal strain.

It has been demonstrated in the Research Residence that a manually operated furnace may have flue gas temperatures in excess of 1200 deg. F. At such temperatures the smokepipe near the furnace glows red and the galvanizing layer on the pipe is burned off. The same furnace equipped with adequate limit controls can be operated with flue gas temperatures not in excess of about 800 deg. F. even under maximum demand conditions. One simple way of avoiding high intensity firing, particularly with the radiatorless type furnaces that have been specified by certain government housing agencies, is to install an automatic draft regulating damper in the smokepipe so that the maximum attainable draft is definitely limited.

If houses have been greatly overheated by manual control of a hand-fired plant, then the use of a thermostatic control will show comparatively large fuel savings. On the other hand, if the homeowner has not overheated the house the fuel savings resulting from the use of controls will be comparatively small. In either case, however, both the abuse of the furnace and fire hazards will be largely minimized. When and if the time comes when metals will not be as critical as they are now, no more urgent market exists than the conversion of manually operated heating plants to automatically controlled plants.

Proper Hand Firing

The Engineering Experiment Station has just released a publication, Circular 46 by Kratz, Fellows and Miles, which completely covers the proper methods of firing a coal furnace. This circular is obtainable from the Experiment Station at Urbana, Illinois, and is illustrated with diagrams showing recommended firing methods to minimize smoke and to prevent the loss of available heat from unburned combustibles going up the chimney. No heating contractor knows so much about coal firing that he can afford to pass up some of the tips presented.

Proper Duct Installations

Experience gathered in examining many trouble jobs shows in general that a poorly installed gravity warm air system consumes more fuel than necessary because the firing process has to be forced in order to make the air circulate. A properly installed system will at peak demand give register air temperatures not much in excess of 135 to 175 deg. F. A restricted system that has several bottlenecks impeding the air flow may require register air temperatures in excess of 200 deg. in order to function even reasonably well. The latter system with the galvanizing layer burned off, with hot basements, with warm air runs that run in reverse, and with slow air motion will not have as long a life as a properly installed system. In this connection every heating contractor is urgently requested to purchase a copy of the Gravity Manual from the Association and study the contents. There is no better way of checking up on a given installation to find whether the duct areas are sufficient in capacity.

The items enumerated in these two issues cover in a general way the high spots of factual data available that are related to the present program to save fuel and metal. Complete details are presented in the original publications. Extravagant claims made with the use of certain gadgets should be viewed with suspicion unless valid confirmatory test results accompany them. The twenty-five years of research back of the warm air heating industry puts it in a unique position of being able to offer facts rather than fancy, and to enable the heating contractor to jump into this national program with his eyes open.

Uncle Sam WANTS YOU TO CONSERVE FUEL BY EFFICIENT HEATING

FUEL conservation will be one of the keys to our ultimate Victory . . . and you should do your part. Our government has recently issued a Movie Short dealing with Home Heating problems, and how to conserve fuel. If it has not already been shown at your local theatre, it will be shortly. You should see it—it suggests ways and means to insure comfort at decidedly reduced costs. To make sure you are getting all the savings outlined in this feature, let us check your furnace and home for heat losses that increase fuel consumption. Have this survey done by experts . . . by men who will honestly tell you if your home is getting every bit of heat it should in proportion with the amount of fuel consumed . . . men who can make suggestions that will remedy excessive fuel consumption . . . *at no charge to you!*

Have this necessary check-up now . . . so that you will be assured that this heating season will be your most economical . . . that you will be cooperating with your government to the fullest extent. Wasting fuel is helping the Axis . . . so instead join the "Conservation Corps" and help lick them. Mail the attached postage free post card correctly filled in and have one of our heating men inspect your heating system. *Do it now.*

DEALER'S NAME

Let's Tell the public

OUR'S is the industry which can guarantee fuel savings

KEEP 'em HEATING

Sample handbill or mail box stuffer, size 8½x11, cheap printing, tuned to the war effort to conserve fuel.

THE government, the moving picture industry—yes, even your neighborhood movie house, probably—are going to help you get business in October if present plans are not delayed.

This helping hand will be extended via a moving picture "short," taken sometime ago in the Research Residence at Urbana by a group of moving picture company photographers. The film will become a part of the government's drive for fuel conservation and will be shown in practically every movie house in the country, according to the announced plan.

At the Research Residence the cameras were set up to film mechanics taking out the oil burner and placing the grates back for coal firing. Another strip of film was taken of smoke coming out of the chimney indicating poor firing and then the proper way to fire a furnace was filmed in the basement. Other sections of film will show mechanics weatherstripping windows and the owner setting the thermostat to save fuel by reducing night temperatures.

Millions of home owners likely will view this "short" in the next few weeks.

What better time and what better opportunity for contractors to tell their customers and all home owners that they can save fuel by having a heating man put their heating plant in first class condition?

The best way to capitalize on this effort by government to save fuel, it would seem, is through an inexpensive mailing campaign. Such a campaign can be form letters to your customers and furnace owners. Or, even cheaper, postal cards. Contractors who customarily use newspaper space to advertise their services can tie their services up to the moving picture.

Your local theatre owner can probably tell you when the film will be shown in his theatre. If you can get the date, call your customers' attention to the film showing; suggest that the customer make a special effort to see the film. Then go on to explain how the services you offer make fuel saving possible. This can be done in the letter or on the postal card or in the advertisement.

There is a very good opportunity in conjunc-

Dear Mr. Homeowner:

Our railroads and ships can't haul a normal supply of coal and fuel oil this winter because most of the nation's railroad cars and tankers must be devoted to the vastly more essential job of moving war supplies and equipment.

That's why fuel is being rationed this winter. That's why every real American now must—as a patriotic duty—cut his consumption of heating fuel by every means at his command.

A ten, twenty, or thirty per cent cut in **your** fuel supply would work a real hardship on you and your family if it forced you to live in temperatures five or ten degrees below normal. But, as you may already have learned through the special movie that the government is now showing in neighborhood theaters, it is possible in the average home to greatly reduce fuel consumption without reducing heating temperatures a single degree!

For example, a home that normally uses ten tons of coal per winter will need only nine tons for proper heating if weather stripping is installed—and only **seven** tons if storm windows and doors are added. Still another ton can be saved if an inch of insulation is added to the walls.

Knowing the rules of efficient firing will also cut down fuel waste. And putting the furnace into prime operating conditioning—cleaning it, and replacing warped or broken parts—can save more pounds of coal and gallons of oil every day—**without the loss of a degee of heating comfort!**

In many cases, the cost of overhauling the furnace, and of installing weatherstripping, storm sash, and insulation, will be more than offset by the resulting savings in fuel bills. So, in effect, all the government is asking of a great many home-owners is that they use some of the money they have been spending for fuel to make improvements which will enable them to do as good a heating job with less fuel.

Undoubtedly you have been wondering how you will manage with less fuel. Let us, as heating specialists, check over your furnace and entire home, to help you determine what you can do to contribute to the fuel saving programs, and, at the same time, prevent unnecessary discomfort in your home this winter under fuel rationing. Our inspections and recommendations are made without charge. Call us by phone, or drop the accompanying card in the mail today. We'll call day or evening, whichever suits you best.

Don't delay this important matter a day longer than absolutely necessary. For the parts and equipment that make fuel saving possible without the loss of heating comfort, may be as scarce as tires in a month or two.

Sincerely yours,

This letter can be copied on your letterhead and mailed to all your customers and prospects. Or mail it to telephone or city directory lists.

tion with this film to set yourself up as something more than the "furnace man." Not only can you inspect the furnace; and clean it; and replace worn out parts; but you can also offer to explain how the owner can save fuel by installing insulation or storm sash or weatherstripping. Our Research Residence has tested the savings brought about by addition of insulation or storm sash or weatherstripping or combinations of these. The percentage of fuel which can be saved has been charted simply—you can show such a chart to your customer.

Probably the furnace dealer will not sell storm sash or weatherstripping—but many dealers do sell insulation. Even though you do not sell any of these, you can secure the owners' appreciation by advising him on what he ought to do. Your advice will likely be accepted readily because the owner knows you have no high pressure selling axe to grind. And your advice will not go unrewarded because insulation, storm sash, weatherstripping insure additional comfort and make the owner more than ever pleased with his furnace.

As we pointed out in the editorial in the September issue—keeping 10 million furnace users comfortable this coming winter is our contribution to winning the war.

Most readers, probably, have conducted mailing campaigns before. But for anyone who has not, we repeat such a campaign need not be expensive. The best possible list of names to whom you can mail a letter or a postal card is your list of customers. These customers know you. If they are really customers and not just a location where you installed a furnace, you have done work for them before. They have confidence in your ability and your service—if you suggest a check-up now to prepare for fuel conservation, your suggestion will be accepted.

Telephone Directory Lists

For those who never have kept a list of customers, the next best list (which costs you nothing) is your local telephone directory. If your community is small or medium sized you can probably mail to every name in the book at a nominal cost. If you operate in a large community, take the names by district, if possible, so that all work received can be economically routed to save time, tires and gasoline. Names of families by districts can be obtained from your local city directory which usually lists names by streets.

In these times when many customary avenues of buying are closed up or closing, when familiar service organizations are not able to serve their clientele, it behooves every dealer to make sure that the services we offer are plainly and forcefully impressed on the customer.

We are, in the emergency, much more than "furnace men." This winter ours will be a serv-

YOU MUST SAVE

EVERY 4th SHOVELFUL

IN FACT IT IS YOUR PATRIOTIC DUTY TO HELP CONSERVE EVERY BIT OF FUEL POSSIBLE

IF your furnace and its accessories are operating with maximum efficiency . . . if your home is correctly insulated . . . if weatherstripping is used to best advantage . . . it is possible to reduce your fuel costs 20 to 30% . . . yes, save every fourth shovelful.

This saving in fuel will not only keep our war industries operating at full blast . . . but will make this heating season your most economical . . . and with the savings you can buy War Bonds.

The best way to find out if your furnace is operating at peak efficiency is to have one of our heating experts check it for you. He will intelligently advise you of its exact condition and if it is not doing its job, make suggestions as to how the ailment may be remedied.

THERE IS NO CHARGE AND YOU ARE NOT UNDER ANY OBLIGATION IN REQUESTING THIS CONSULTATION. So phone 0000 to have your furnace and home checked . . . it will save money for you, and the fuel you help conserve will help keep America free.

DEALER'S NAME

If you customarily buy newspaper space, this ad can be set 3 or 4 columns wide and will tie your usual advertising to the fuel conservation program.

ice of comfort, health, economy. It will be our industry which will keep householders warm. Warmth won't be obtainable this coming winter simply by buying more fuel. Warmth must be obtained by wringing every Btu out of every pound of fuel consumed. More Btu's never could —the fewer Btu's we'll have this winter can't possibly—offset cold floors from drafts, chilly corners from cold walls and windows, poor circulation of warming air, or all the heat at the ceiling. We were the only ones who could—we will be the only ones who can—keep 10 million furnace users warm this winter.

Comfort Must Come from Efficiency

And the same for health. To be healthy the home owner must be warm, there must be adequate ventilation, there should be sufficient moisture in the air, the air should be free of dust, the temperatures must be constant all through the day and uniform from room to room. This winter the owner will have to obtain these healthful surroundings by making existing equipment function as it was designed to operate and not by buying more gadgets.

And both comfort and health will have to be secured at lower cost than previously. Some owners will get less fuel than formerly. Many may find fuel harder to get. Certain brands or kinds of fuel may go off the market. Certainly every pound of fuel must be stretched to its maximum.

From twenty years of research activity, this industry is adequately supplied with technical information which will enable us to keep 10 million home owners comfortable if we use our knowledge and if we let these home owners know what we can do. The sure way to advertise our services is by a simple mail campaign to tie into the government's fuel conservation moving picture and government's fuel conservation campaign.

Fuel must be conserved to keep war industries at top production . . . to keep tanks rolling . . . planes flying . . . and when you conserve on fuel you naturally have additional savings which can be put into War Bonds to assure Victory. So make sure your furnace is in first class condition; hear about the fuel savings insured by insulation and weatherstripping; learn if all accessories are operating as intended; in short, make sure you are getting the most out of every penny's worth of fuel you burn. The easiest way to ascertain all these facts is to have our service man call and check your furnace and house for you—*Free of any cost or obligation*— Take advantage of this offer—co-operate with your government—mail the reply card at once and our man will call!

DEALER'S NAME

MAIL THIS REPLY CARD NOW!

No Postage Necessary

★

I want to Help Save Fuel!

Send your man to check my home heating efficiency at once. I am obligated in no way to buy anything.

NAME .....

ADDRESS .....

CITY .....

PHONE .....

This is a standard size double postal card—one-half is returned to you accepting your service offer.

Dear Mr. Homeowner:

Every pound of coal or gallon of oil you burn UNNECESSARILY this winter is going to make our already hard job of whipping the Axis just that much harder.

For every one of the thousands of railroad cars and dozens of tankers that are normally used to haul coal and oil for the heating of millions of American homes are sorely needed today for the movement of war supplies and equipment. They are needed so urgently that home-owners must get along this winter—and probably next winter, too—on fifteen to thirty per cent less fuel than in past years.

Fortunately, though, using less fuel is one "sacrifice" a great many home-owners—and probably you, yourself—can make without undergoing any real hardship. For it is possible for nearly every home to save some fuel—and in many cases to cut fuel consumption by as much as two-thirds—without reducing heating temperatures a single degree!

Maybe you already know this. Maybe you have seen the movie recently released by the government to neighborhood theaters, which shows home-owners various ways in which they can save coal and fuel oil, and still be as warm as ever this winter.

But whether or not you have seen this movie, you are, I am sure, anxious to know just what can be done in your home to save fuel. For if you can get along on ten, twenty, or thirty per cent less fuel, you'll not only be making a valuable contribution to the war effort, and saving some money at the same time, but you'll be safeguarded from discomfort under the fuel rationing program.

Let us check your heating plant and home now to show you what savings in fuel are possible in your case. Our inspection and recommendations will be made without charge. Phone us now at ....., or mail the enclosed reply card today. We'll be glad to drop in whenever it is most convenient for you.

Don't wait until rationing forces a cut in your fuel supply. Act now, while the parts and equipment that will enable you to save fuel, without suffering discomfort, are still available.

Sincerely yours,

KEEP 'em HEATING

Another letter to be mailed your customers. It should be timed to the local showing of the moving picture showing fuel saving in our Research Residence.

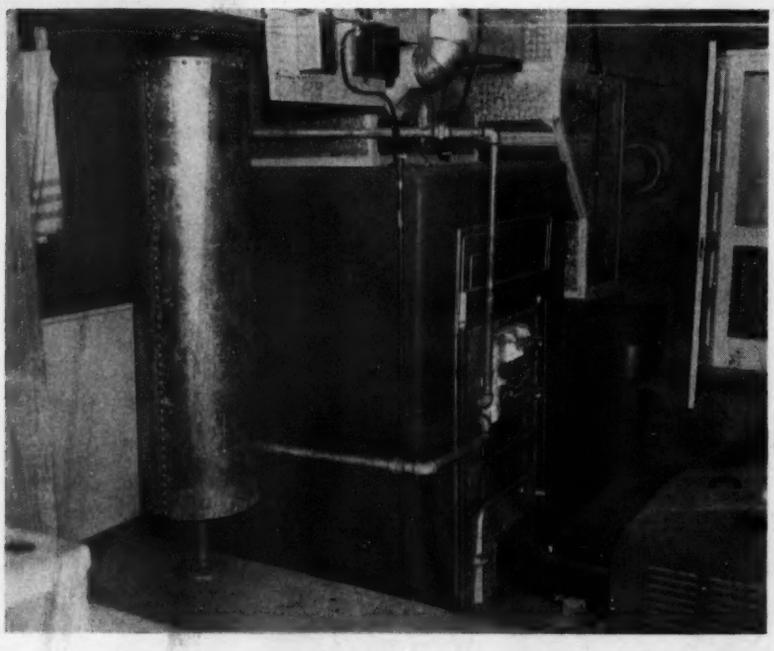
IF YOU SAW THIS INTERESTING SHORT

at your local theatre you will have learned that our government is vitally interested in helping you conserve fuel this winter by suggesting means and ways that you can "dood it." As a contribution to the war effort to make sure this coming winter will be your "cheapest" heating season—you should have your heating plant checked to be sure you are securing maximum efficiency. One of our expert heating men will gladly inspect your heating system to determine if it is operating at peak efficiency . . . and advise you what may be done in case it is not. *This service is offered Without Charge or Obligation on your part.* Take advantage of this opportunity to assure yourself of perfect furnace operation and great savings in fuel costs. . . Telephone Main 0000 for a man to call at once!

DEALER'S NAME

This single standard sized postal card has no return so it should be mailed to customers who know you personally or know you by reputation well enough to phone you an acceptance.

Southern mansion in which Rainey recently installed a winter air conditioning system and, below—the stoker-fired, square cased furnace. Stoker is bin feed.



By George H. Watson

Rainey Heating Co., Montgomery, Ala.

"Uses the User" To Build Sales Volume

"THE heating system in this house shall follow the same general specifications as that in the home of Mrs. Byers."

This clause in a contract recently signed for a winter air conditioning installation by the Rainey Heating Company, Montgomery, Ala., helps to explain the success of this concern. From 60 to 75 per cent of its business comes from satisfied users as exemplified in the above mentioned case. In fact the Byers installation as duplicated in this contract was responsible for at least three other sales.

Word of Mouth Best Advertising

It is the old story of "using the user" and so far as L. R. Rainey, proprietor, is concerned there is no substitute for word-of-mouth advertising. He uses other kinds, including newspaper and direct-mail, but he regards them as more or less of the good will type and depends on his direct sales and service contacts for the great bulk of his business. But let Mr. Rainey tell his own story:

"My satisfied customers are my best salesmen, in fact my only salesmen. They, in effect, range the prospect field for me, reporting names of friends and acquaintances who may be planning to build a new home or replace old equipment. I have ample evidence that much of my business comes through this source. For instance, I find my installations bunched. In other words, I may have a half dozen jobs in one community and none in one nearby. That is because one job begets another and often as not it is next door, in the same block or across the street.

One Job Sells Another

"Recently I recall that a doctor called me stating I had been recommended to him as a dependable heating man. He asked me about a dozen questions, one of them the names of some persons for whom I had made installations. I keep a list of such names and gave them to him. Later he called back and the first question he asked was

'What did you pay those folks to recommend you so highly.' I replied that all I gave them was conscientious workmanship and service. I then asked that I might have preference on his job, and he replied: 'Preference, why, you already have the job,' nor did he ask me the price."

As the foundation stone for a satisfactory job (one that will sell itself to others) comes from the installation itself, Mr. Rainey keeps this one objective before him. If in bidding on an architect's specifications, he thinks it is not sufficient for satisfactory heating of the house in question, he says so. Although he may render a bid on the specifications as is, he specifically states he can't guarantee the job. But he goes further and lists a price which will cover a type of installation which he can guarantee. This frankness sometimes gets him the job at the higher price. Especially is this true if the architect is willing for him to discuss the matter with the owner.

◆

Bid in letter form submitted by Rainey to an architect. Note bid states the system designed cannot be guaranteed, but a proposal which can be guaranteed is added at a higher price.

◆

"The other man may talk himself out of trouble, but I am too busy," remarked Mr. Rainey in explaining why he did not care to take a job at a knock down and peddled price. This doesn't mean he isn't anxious for business—he is, but he is foresighted enough to see that he is defeating his own purposes by taking a job that he cannot guarantee.

RAINEY HEATING COMPANY
STOKERS - HEATING EQUIPMENT
ATTIC FANS
PHONE 2316 112 LEE ST.
MONTGOMERY, ALA.

February 6, 1942

Mr. J. M. Smith,
Montgomery, Alabama

Dear Mr. Smith:

in re: K. L. Jones Job

We propose to furnish and install a warm air heating plant in accordance with plans and specifications for the price of $947.00. This bid is for competition only as we cannot guarantee this heating plant as stated in the specifications.

We propose to furnish and install a heating plant using the following materials: One Winter Air Conditioning Unit with a rating of 175,000 BTU and a 14 inch Fan with a capacity of 1800 to 2200 CFM. This system will have 17 Warm Air Registers and 13 Cold Air Registers instead of the number shown on the layout. This heating plant will be fully guaranteed as to temperatures desired and workmanship and material. The price on this plant is $1070.00.

Alternate One: We propose to furnish and install a forced circulating hot water system in accordance with plans and specifications listed under alternate one in the specifications for the price of $1360.00.

We thank you for the opportunity of quoting on this job.

Yours very truly,

RAINEY HEATING COMPANY

L. R. Rainey

LRR:DM

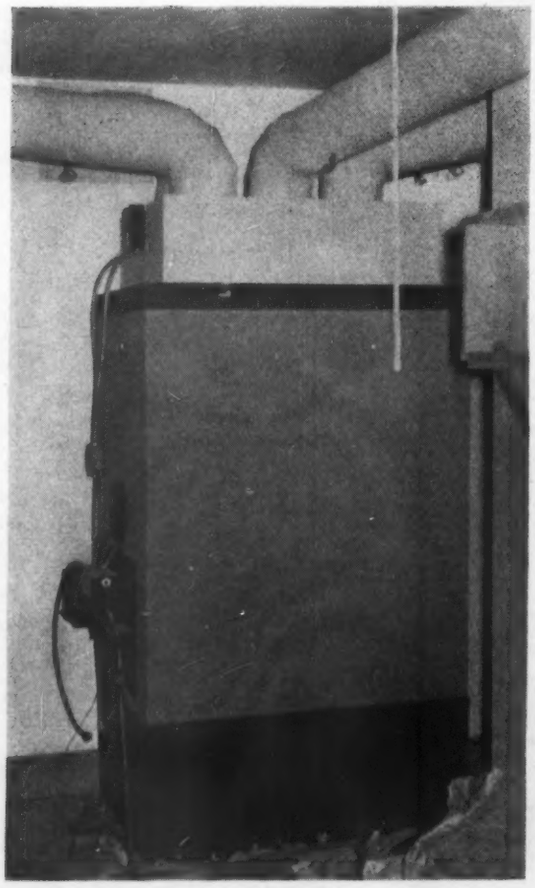
ACCEPTED: _____

Rainey has rather specialized the past two years in new home construction, making installations in some of the finest residences built in central Alabama. This requires working quite a bit with architects and contractors as well as the owners. In about 75 per cent of the cases he sells a complete air conditioning system—furnace, stoker and controls. In the Summer Rainey sells attic fans as a supplement to his heating business.

L. R. Rainey, proprietor of the Rainey Heating Company and part of his display adjoining the office.

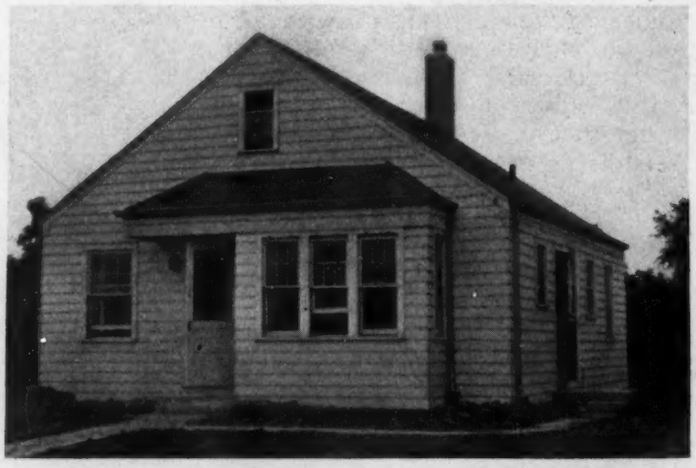
Prefabricated Ducts Used

Rainey uses prefabricated ducts exclusively and keeps a stock on hand. He believes that by using prefabricated ducts he is able to install a workmanlike job in the shortest length of time and, not having a sheet metal shop to operate, he is able to give a maximum of time to merchandising. Selling is the end of the business in which he shows much enterprise. He covers quite a bit of territory in a day, doesn't mind hopping in his car and dashing into a neighboring town, some 25 to 50 miles away to see a prospect. As he puts it "Contact and more contact, that is what it takes to sell jobs."



[Defense House Heating]

Exterior, furnace and warm air pipes and, below, floor plan of houses with shallow return air plenum. Bonnet and tin warm air pipe weigh approximately 100 pounds. Furnace is a Gasoroil, oil burning, forced air unit.



100 Pounds of Ductwork

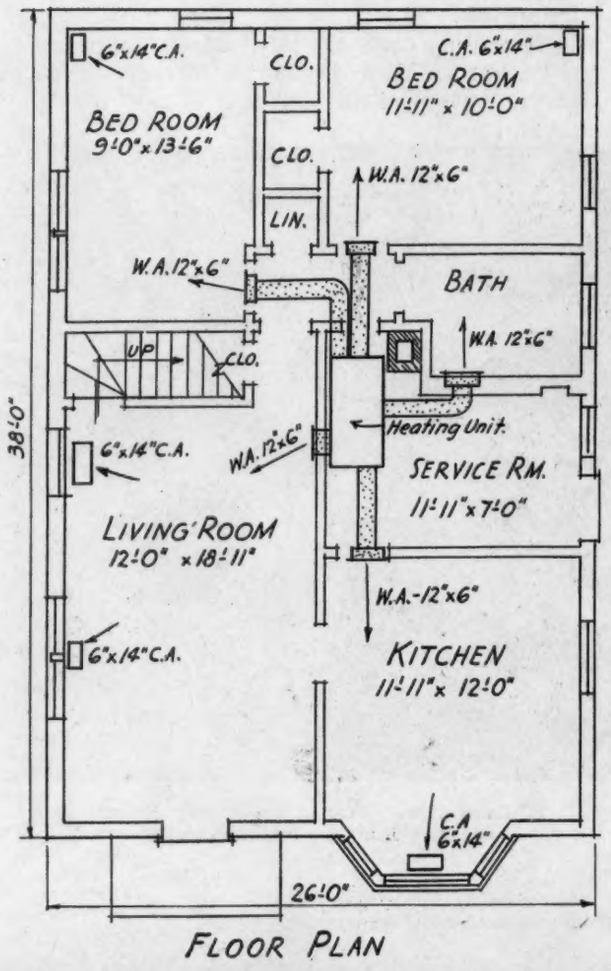
IN Hobart, Indiana, the Villa Shores Realty Company, over a period of several years, has gained wide recognition for the small houses erected to sell in the $6,000 to $8,000 price range. Now that the whole northern Indiana area has turned to war production on a tremendous scale, the company has changed the type, material, and selling price of its houses to conform with the "defense worker" specification. The latest models are called "Victory Homes" and sell for $4,500.

One of the interesting features of these houses—from the very beginning of the project—has been the heating systems. The heating system in these houses is worth study for two reasons. First, it offers the prospective buyer a strictly modern heating plant with forced warm air, filtration, automatic oil firing and fully automatic control. Second, and of interest in this series of articles on heating defense houses, it is hard to see how any system which serves every room individually could be installed with less material.

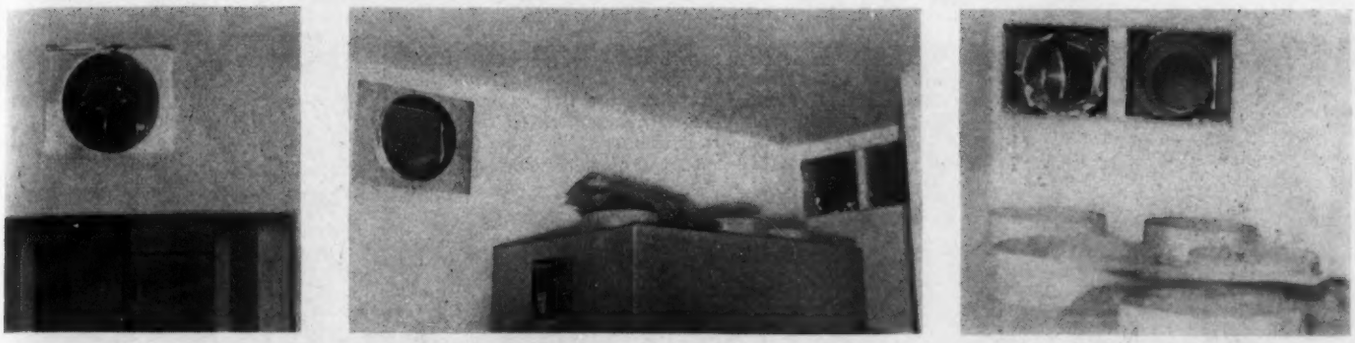
Plenum Return

The floor plan of the photographed house shows the general arrangement of rooms, the location of warm air registers and returns, location of the furnace in the service room and the short runs of warm air leader pipe.

One of the details shows an elevation detail of



FLOOR PLAN



The round tin pipe come off the plenum as a short stub and an elbow. To get the pipes through the partitions a flanged collar was set in the wall as shown above to hold pipes clear of wall material.

the shallow "basement" with all concrete floor and walls into which the return air empties from the floor grilles and from which the blower in the bottom of the casing picks up the air. In this system there is no "off-the-floor" return, but there is a return air grille from every room except the bath.

Closed Returns Now Used

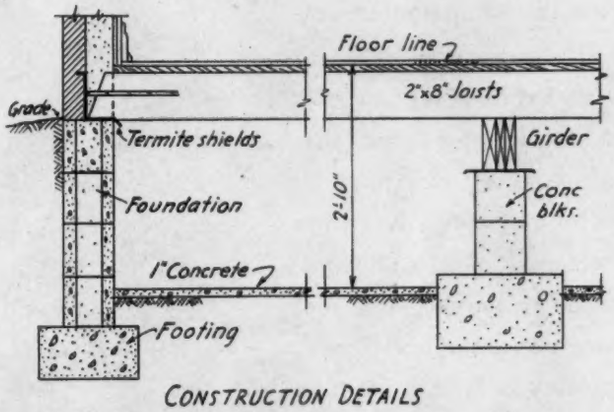
Another plan shows a closed return system which is now being installed in "Victory Homes." The closed return system is now used because the Indiana FHA has recently ruled that return systems must be complete ducts. Note that return grilles are placed around outside walls and that the return system runs across and below joists either as panned or full ducts made of metal or of substitute materials.

The organization reports that on future "Victory Homes" serious consideration will be given to taking the return air "off the floor" probably through three grilles at the baseboard in the partitions separating the furnace room from the living room, the kitchen and bed room hall. This will meet FHA specifications and will save additional material and labor.

Warm air distribution until the "Victory Homes" was through round tin pipe, papered. The photographs show the pipes taken off the 22-inch plenum as close coupled elbows and the interior of the pipes running through the hall. The plan shows the location of the pipes and the registers above doorways. The result of this compact pipe arrangement is the use of just about 24 feet of straight pipe plus 7 elbows.

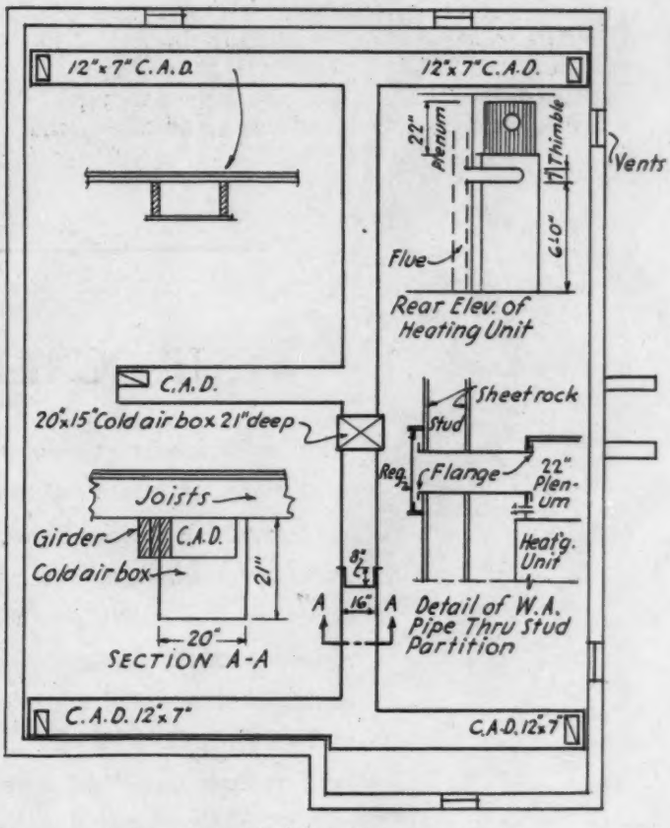
All registers are one size—12 by 6; all pipes are one size—8 inch; all return grilles are one size—14 by 6-inch—the result is that over several scores of houses such standardization makes for economical buying and installation.

In the "Victory Homes" a straight up plenum is used with rectangular galvanized iron or black



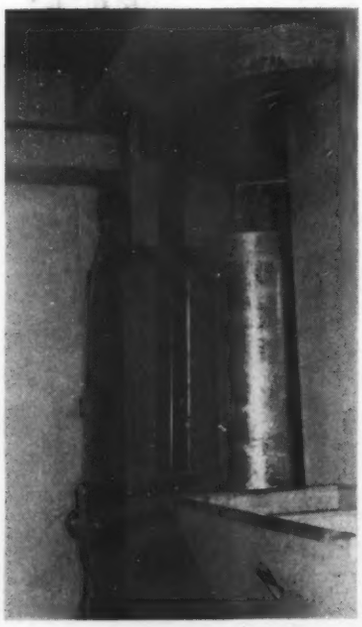
CONSTRUCTION DETAILS

The shallow return air plenum is a full concrete construction as shown here, extending under the whole house. The fan pulls through a hole under the casing.



FOUNDATION PLAN

Indiana FHA now asks for a closed return, so in the Victory Homes the cold air system shown here is used. Note detail showing flanged ducts which eliminate register frames and boxes.



Victory Homes are shown below. At left is the furnace with rectangular ducts with same layout as shown on floor plan. Return air through the floor (right) has a metal box from casing to duct as shown on the foundation plan.

iron warm air pipes taken out the side of the plenum thus eliminating the take-off elbows shown in the photographs. Only two duct elbows are required. Also interesting is the fact that in "Victory Homes" the duct system will require about five sheets of iron and the supply ducts plus plenum will weigh about 100 pounds.

In addition to these major savings through standardization, several small features also contribute to saving of material and labor. For instance, in the "Victory Homes" register boxes are omitted and in place of the box the square pipe is flanged as shown into the plenum and nailed to the sheet rock of the partition. Again, the cold air duct running across joists is placed against the bearing partition beam so that the beam forms one side of the duct.

Not discernable in the illustrations is the saving in installation time obtained by fabricating a standard plenum with straight-out warm air pipe all one size and the metal collars which take the pipes through partitions. When the job is ready for the furnace installation the plenum, straight pipe and elbows are delivered as a standard "package" so that the mechanic can finish the job in a minimum of time.

YOUR SCRAP IS NEEDED

THE drive for scrap which, quite naturally, is getting the most attention in the newspapers is the campaign collecting scrap from millions of homes all over the country. Not so widely publicised, except in the trade press, are the drives inside industry which are housecleaning shops, factories, industrial establishments of all sizes. It is from industry that government expects to get the bulk of the scrap so sorely needed. Government looks to industry, first, because industrial scrap is readily classified, and, secondly, because large quantities are concentrated in relatively few centers. Our industry may not be a General Electric, but if all shops in each city will pool their scrap, we can contribute markedly to scrap stockpiling for winter use.

Duct Temperature Losses In Forced Air Heating Systems

By H. G. Hill, B. A. Sc.
Registered Professional Engineer (Ont.)
Manager, Furnace and Air Conditioning Div., Gurney Foundry Co., Ltd., Toronto, Ont.

DUE to the many variables involved in heat losses from ducts and the fact that not sufficient tests have yet been run to analyse some of these variables, there is a definite lack of information on this subject. A booklet published by the National Warm Air Heating Association, "The Technical Code for Mechanical Warm Air Heating Systems", advises that "a temperature drop of ¼ to ½ of a degree per foot of duct length will occur with main trunk lines and branches, respectively". No doubt these figures are suitable for average residential work, but whenever a heating contractor encounters a job where the ducts are relatively long, he is apt to make a considerable error on this basis. This investigation is to determine co-efficients which may be used in standard formulae so that the temperature drop may be computed for special conditions.

A further object of the test is to observe the influence of time lag where intermittent firing occurs, such as in the case of the oil burner, gas burner and to some extent, the automatic stoker. Being controlled by a thermostat, these devices operate intermittently, so a certain lag occurs in

Three furnaces, stoker-fired, supply 1,800,000 Btu with 21,000 cfm to one half the grandstand. Compare with Fig. 2 and note the large round pipe mains.

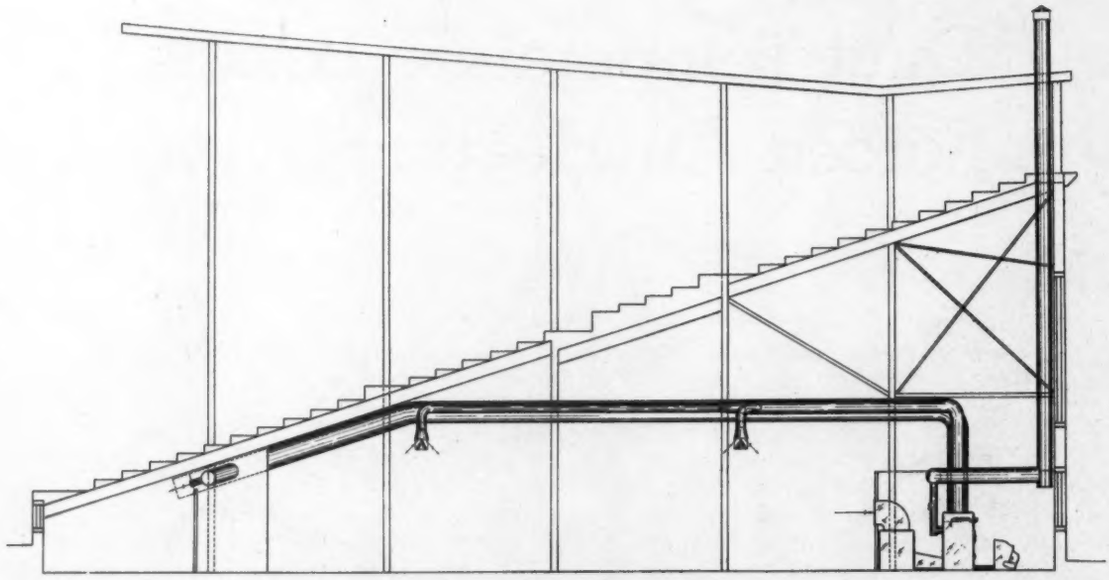


Fig. 1—Sectional view of the heating system and grandstand. Note there is no false ceiling and that the concrete structure forms the outside walls.

producing heat at the end of the duct because of the necessity of first warming up the duct. If the thermostat shuts off the burner before the full temperature is obtained at the end of the duct, then this zone will be underheated, unless special precautions are taken in the design.

Test Equipment

An excellent opportunity was provided for tests on both insulated and uninsulated ductwork when a large forced air heating system was installed in the C.N.E. Grandstand at Toronto, Canada. This building requires six large stoker-fired steel furnaces (Armstrong Furnace Co., Columbus, Ohio) and fans (Lau Blower Co., Dayton, Ohio) to heat the main portion of the building, which is approximately 350 feet long by 110 feet wide.

The accompanying drawings describe the ductwork and installation. Long ducts were available both of the plain galvanized iron type and also galvanized ducts insulated with 2-ply corrugated asbestos. The principal advantage in testing at this location was that when tests were being run on any particular furnace system, the other stokers could be regulated so that the room temperature would remain fairly constant.

Another advantage with this installation was that in the case of the insulated duct, a section was selected about 100 feet from the furnace so that fluctuations in furnace bonnet temperature were dampened out by the time the heat reached the test section, T4 to T5, Fig. 2.

Test Procedure

(a) *Galvanized duct with no insulation.* Two tests were run to measure the temperature loss from the galvanized duct and also the time lag involved when the furnace temperature was increased from the minimum to the maximum intensity.

These results are indicated in Fig. 3 where the temperature readings at each station are progressively recorded. In the first test, indicated by the curves at the left hand side of the graph (Fig. 3) the duct temperatures are brought up to maximum value as rapidly as the stoker fire would permit. In the second test the stoker air shutter was adjusted so that when temperature T9 had reached certain selected values, an attempt was made to maintain the fire at this intensity to determine the steady temperature drop in the duct. These temperature drops were then compared with the first set of curves and an indication of the time lag was obtained.

From the results with steady conditions, it was then possible to calculate the thermal transmission coefficient and the radiant heat emissivity. In further calculations this emissivity was not actually used for normal conditions because these

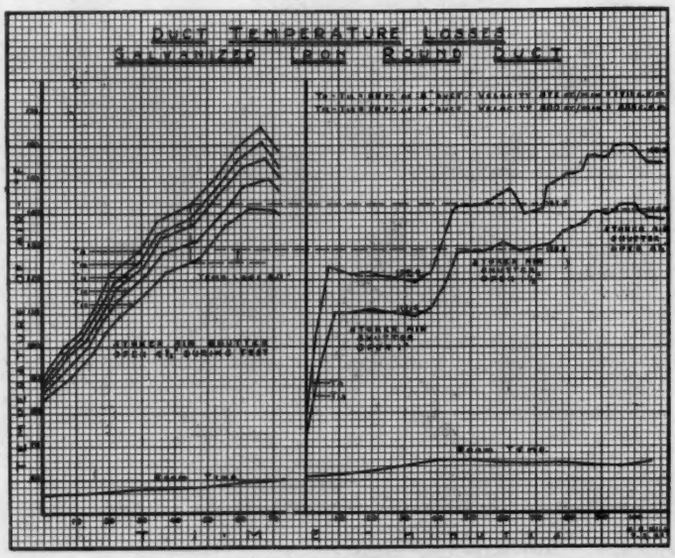


Fig. 3—Left—Duct temperatures increased as rapidly as possible. Right—Stoker fire adjusted to maintain steady conditions at three pre-determined values.

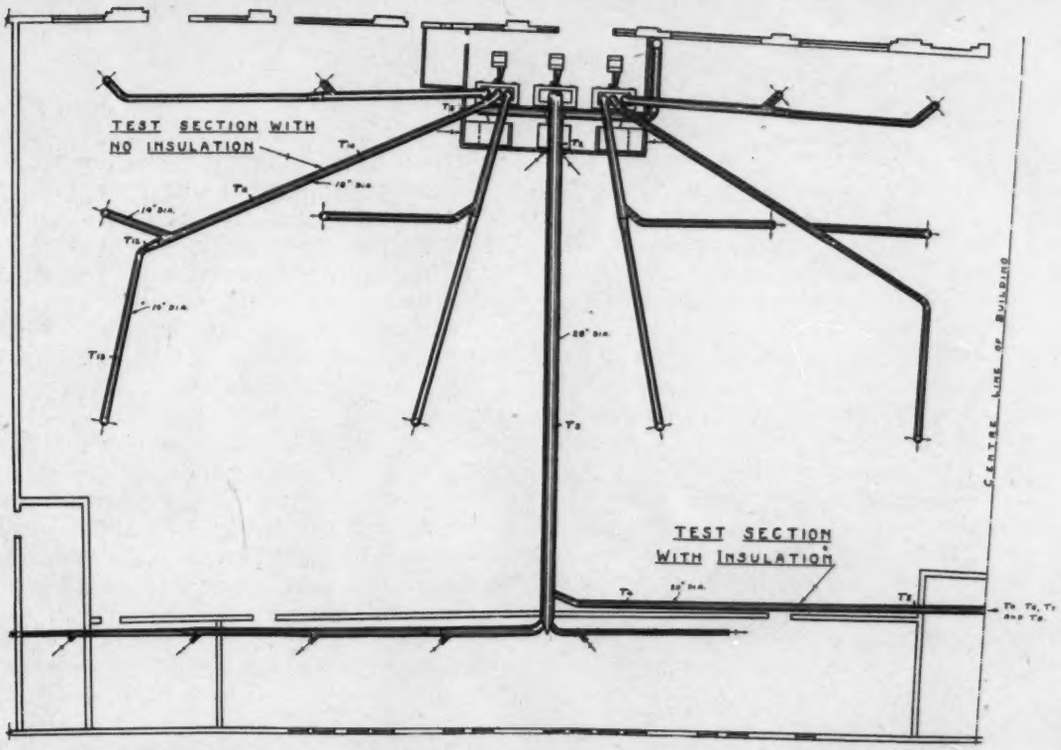


Fig. 2—Plan of heating system showing location of leader pipes and stations at which duct air temperatures were taken. A similar system heats the other half of the grandstand.

ducts had only been installed for about four months and although they were slightly tarnished and covered with dust on the upper half, they would still be somewhat brighter than ductwork which had been installed in a residence for about two years or more.

(b) *Galvanized duct insulated with 2-ply corrugated asbestos.* Thermometers were located every 50 feet in the insulated duct and the recorded temperatures are shown when the temperature was brought up to the maximum value as quickly as possible. Fig. 4 shows that an even temperature drop does not occur between each thermometer which may be largely explained by the varying conditions outside the duct. For instance between T2 and T3, the duct runs in an unprotected zone so that the outer film coefficient would be much higher than average conditions. Likewise between T5 and T6, this portion of the duct runs through an unheated zone so the temperature loss is relatively greater. The section of duct between T4 and 5 appears to have normal conditions because this duct runs close to the wall; it is slightly below the roof and it has no branch take-offs. Also because of the uniform sections, it is possible to obtain accurate air velocity readings by means of a Pitot Tube Traverse.

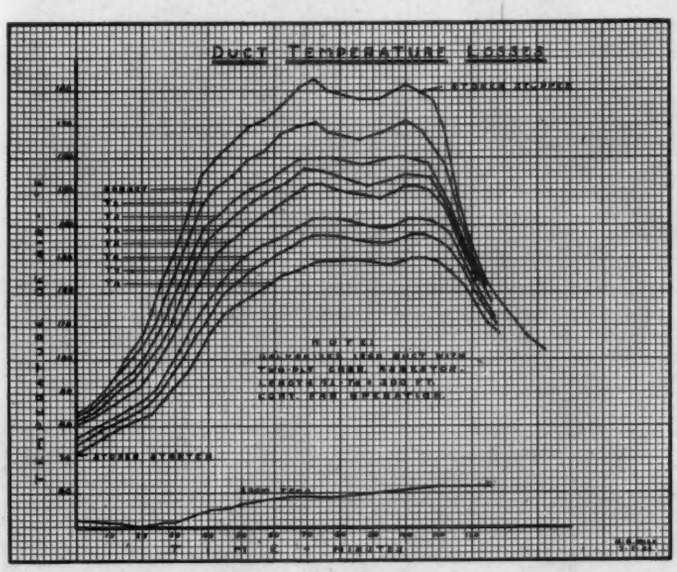


Fig. 4 shows duct air temperatures at eight stations along the insulated duct. The lines show that temperature drops are not even from station to station along a duct—the drop depends on the conditions of the air surrounding the duct.

Analysis of Test Results

(a) *Galvanized iron duct without insulation.* The heat transmission by radiation from a surface to the surrounding surfaces can be calculated from the well-known Stefan-Boltzman formula:

$$q_r = 17.4 \times 10.^{-10} \times p\ (T_1^4 - T_2^4)$$

where q_r = heat transmission by radiation, Btu per square foot per hour; p = effective emissivity of surface and surroundings; T_1 = temperature of hotter surface, degrees Fahrenheit absolute; T_2 = temperature of cooler surface, degrees Fahrenheit absolute.

The heat transmission by free or natural convection can be determined from the formula:

$$q_c = C\left(\frac{1}{D}\right)^{0.2}\left(\frac{1}{T\,av.}\right)^{0.181}\ dt^{1.266}$$

where q_c = heat transmission by convection, Btu per square foot per hour; C = constant depending upon the surface shape; D = diameter of pipe or circular duct or height of vertical wall, inches (effect of diameter or height becomes constant at 24 in.); T av = average wall surface and surrounding air, degrees Fahrenheit absolute; dt = temperature excess between wall surface and surrounding air, degrees Fahrenheit.

Applying these formulae to the test figures between T9 and T13, the results show that the emissivity was less than 0.25. Other investigators state that for badly tarnished ducts, the emissivity is .53, but in the author's opinion, this condition would not occur in average residential heating work. We have therefore assumed a value of 0.35 for the emissivity in this analysis.

Applying this value to the radiant heat loss formula for entering air temperature of 140 deg. Fah. and assuming that the surface temperature is approximately 10 deg. less than the inside air temperature, we find that the thermal transmission coefficient for galvanized duct without insulation would be 1.03 Btu per hour per square foot per degree Fahrenheit. This result is calculated using a 10″ diameter pipe with the convection formula and assuming a surrounding temperature of 60 deg. Fah.

Heat transmission by radiation is:

$$17.4 \times 10.^{-10} \times 0.35\ (590^4 - 520^4) = 29.2 \text{ Btu/hr./sq.ft.}$$

Heat loss by convection is:

$$1.016 \times \left(\frac{1}{10}\right)^{.2} \times \left(\frac{1}{552}\right)^{0.18} \times 70^{1.266} = 53.3 \text{ Btu/hr./sq.ft.}$$

Total heat loss = 82.5 Btu/hr./sq.ft.

Thermal transmission coefficient is

$$\frac{82.5}{80} = 1.03 \text{ Btu/hr./sq.ft./deg.F.}$$

(b) *Insulated Duct.* The test results between temperature T4 and T5 were applied to the standard formula for heat loss from insulated ducts.

$$t2 = \frac{t1 - t3}{e^{\left(\frac{UPL}{14.4\ AdV}\right)}} + t3$$

where U = thermal transmission coefficient, Btu per square foot per hour per degree Fahrenheit; P = perimeter of duct, feet....5.236; L = length of duct, feet....50.0; t_1 = temperature of air entering duct, degree Fahrenheit....155.2; t_2 = temperature of air leaving duct, degree Fahrenheit....150.2; t_3 = temperature of air surrounding duct, degree Fahrenheit....60.0; A = cross-sectional area of duct, square feet....2.182; V = velocity of air in the duct, feet per minute, at specified temperature....970.0; d = density of air, pounds per cubic foot, at the specified temperature at which V is measured....0.075; e = naperian base of logarithms = 2.718.

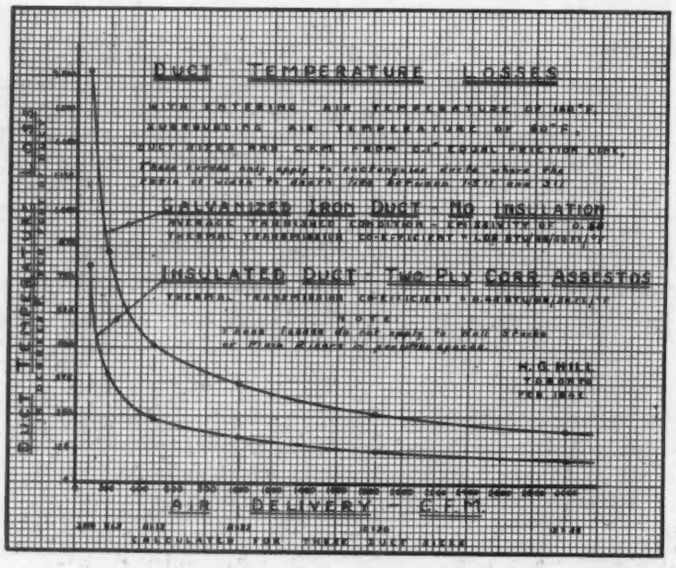


Fig. 5—Duct temperature losses plotted for several sizes of rectangular ducts (not stacks) zero to 3,000 cfm for 0.1-inch frictional resistance.

These test results show the thermal transmission coefficient to be 0.50 when the entering air temperature is 155 deg. A similar test with the entering temperature at 114 deg. showed the "U" value to be 0.40, so by interpolation we find that for an entering air temperature of 140 deg., the thermal transmission coefficient would be 0.46 Btu per hour per square foot per degree Fahrenheit.

Special Curves for Residential Ductwork

It is customary for heating contractors and engineers to select duct sizes and velocities for this type of work so that the resistance is 0.1″ water gauge per 100 ft. of duct in every case. This provides a very simple method of arriving at the total duct-work resistance because it is simply a function of the duct length with due allowance for elbows and other shock resistances. Also this practice provides duct sizes and velocities which are practical for residential work and free from any objectionable air noise. It is also standard practice to design forced air heating systems and to rate heating equipment on a basis of a bonnet temperature of 150 deg. with a return air temperature of 65 deg. Most basements are partially heated in new homes, so the ceiling temperature in the basement seldom falls below 60 deg. Fahrenheit. With due regard to all of these special circumstances, duct temperature loss curves have been established which relate the drop in air temperature per foot of duct with the air delivery at that point.

Table 1 shows the temperature losses for standard size ducts which have been computed with the "U" values established by this test.

Table 1

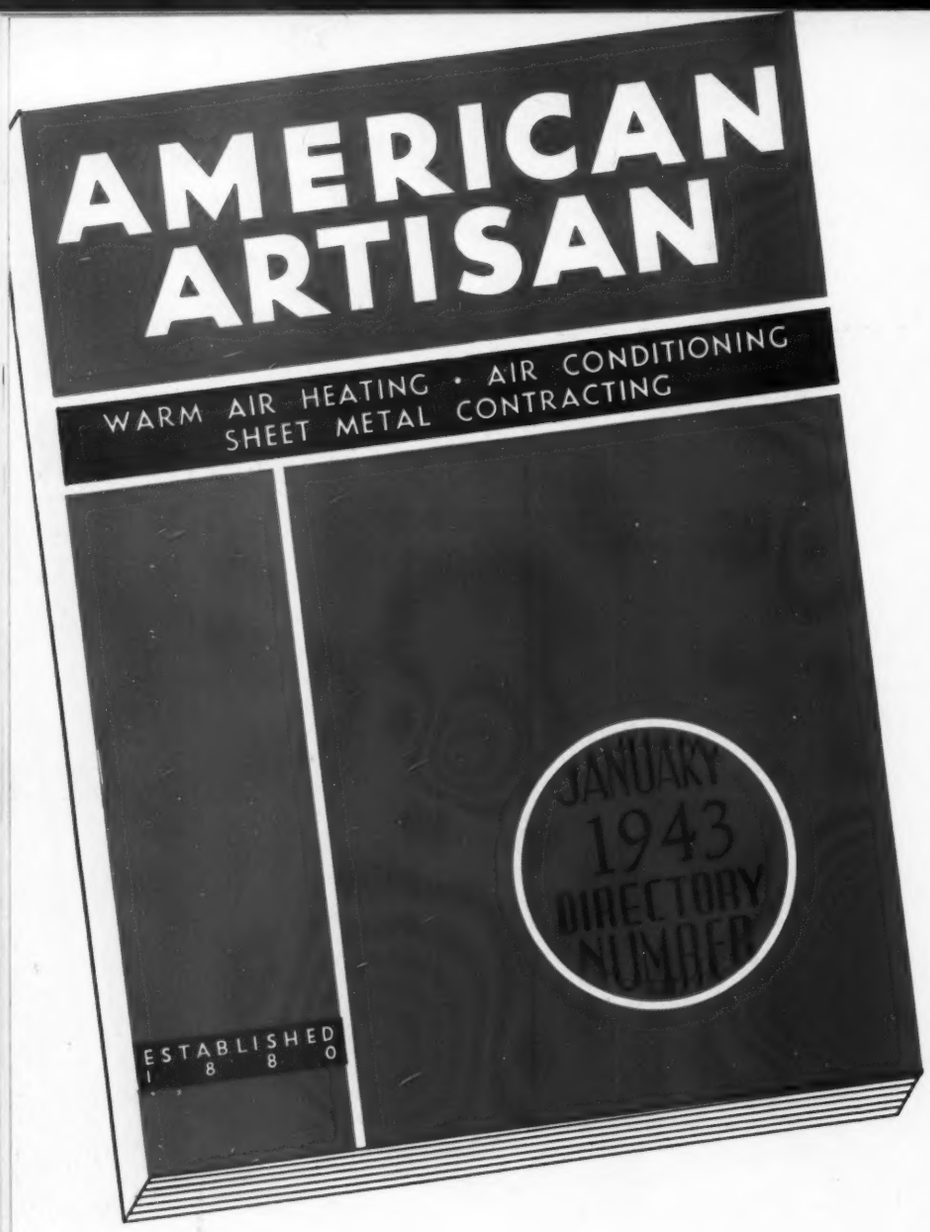
Calculated Temperature Drop Per Foot of Duct for Air Initially at 140 Deg. F. and Surrounding Air Temperature of 60 Deg. F.

Duct Size (Inches)	C.F.M.	Plain Galv. Duct Temp. Drop Deg./Ft.	Insulated Duct Temp. Drop Deg./Ft.
3 x 10	85	1.52	0.79
6 x 9	200	0.84	0.40
8 x 13	480	0.51	0.24
8 x 23	1000	0.37	0.17
10 x 30	1850	0.26	0.12
12 x 36	3000	0.20	0.09

(*Continued on page* 83)

SHEET METAL SECTION

DEVOTED TO SHEET METAL CONTRACTING AND FABRICATING



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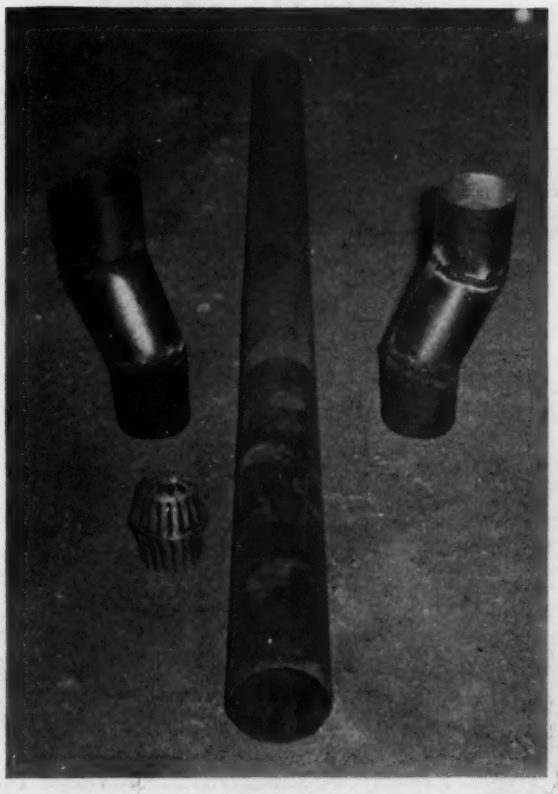
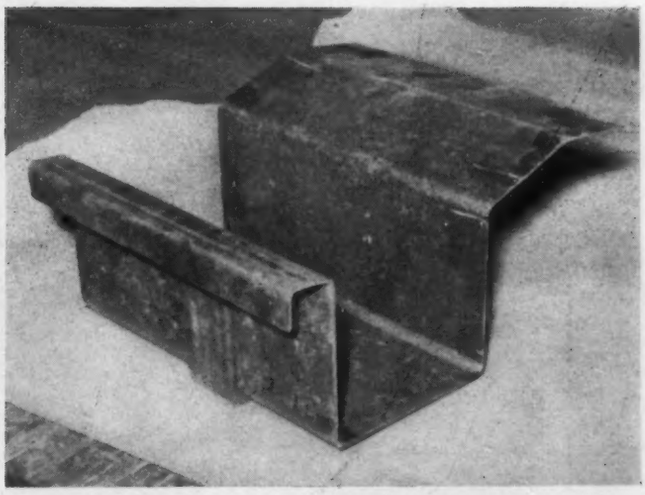
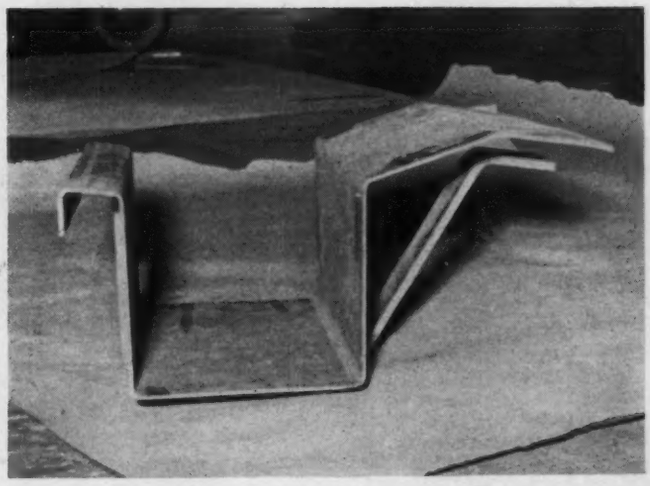






Left is a welded 20-foot length of 20-gauge downspout and the two offsetting elbows. Right —Sample of the 12-gauge gutter showing contour and bar hanger.

12-Gauge Gutter—1,770 Feet Long

FOR an industrial, monitor type building erected especially for war work, Perritt Iron and Roofing Company, Pittsburgh, built and erected 1,062 feet of 24-inch girth and 708 feet of 48-inch girth—12-gauge gutter.

In all the years Perritt has been in business, the firm never had built nor seen 12-gauge gutter. This gutter is so stiff and so rigid that painters on the building, following the sheet metal contractor, hung their scaffolds from the gutter and there wasn't any sag or deflection.

The photographs show sample pieces of the gutter and the heavy bar hanger. These hangers were placed every 3 feet and were made of ¼ by 3-inch bar stock formed to the shape shown.

Perritt fabricated the gutter in 10-foot lengths in a 12-foot power brake. On the job these 10-foot lengths were hung in the hangers and then welded together to form a continuous 354-foot length. In the 24-inch girth gutter which runs along both eaves of the monitor and along the outside wall of the new building, there are no expansion joints. Perritt believes that this absence of expansion joints will be compensated by the sliding of the rigid gutter in the hangers.

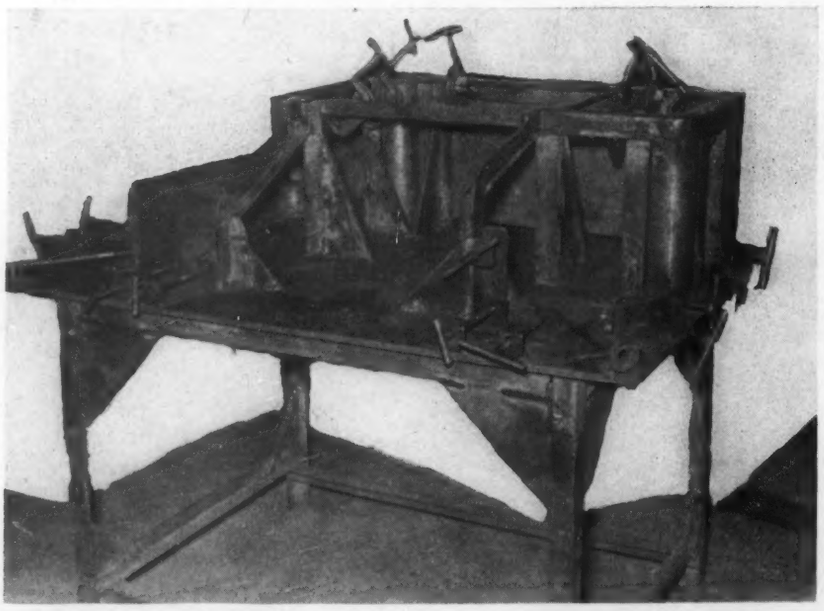
The 48-inch girth gutter lies in the two valleys of the pitched roof of a connecting building which joins a higher old building and the higher new building. The gutters run parallel with the ridge of this connecting building. This 48-inch gutter has two expansion joints in its 354-foot length—at each 118-foot point. The expansion joint is the high point along the gutter and the drains are half way between joints. This gutter does not hang, but is built in between the sloping roof and the rising wall.

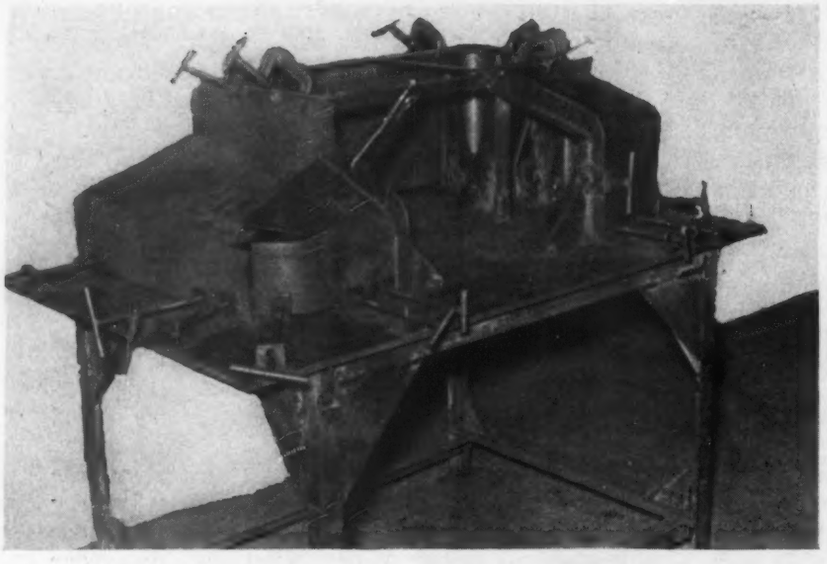
The expansion joint is built as two ends welded into the gutter and flanged at the top. Over the flanges a cap is slipped.

Two types of downspouts were used. From the 48-inch gutters, 6-inch wrought iron pipe connects to the sewer. These downspouts are placed every 75 feet along the gutter.

From the 24-inch hanging gutters along the monitor, 20-gauge downspouts are placed every 75 feet. A photograph shows a welded downspout and the two elbows which offset the downspout from the building. This downspout was rolled as 30-inch lengths and the lengths welded together in the shop to get a 20-foot length for erection.

The hole for the downspout was cut in the gutter on the job with a torch.





The top and bottom photographs show the special jig made by Joe Nikoden of Broen to hold the five pieces of the intricate chip pan which must be held in precise alignment for welding. The welded chip pan (bottom up) is shown in the center photo after the welds have been ground. Note the quick acting, hinged clamps (welded to the base). These force the pieces into alignment.

Any Item Made in More Than 100 Pieces Warrants Its Own Jig

FOR some fifteen Detroit manufacturers of machine tools, the Broen Sheet Metal Products Incorported, Detroit fabricates almost 100 varieties of machine guards machine bases and tanks to a tolerance and a degree of standardization which is a satisfying mystery to the machine builders.

This ability to fabricate in hundreds or thousands of units, each unit being exactly counterpart to every other unit, is due, in a large measure, to the ability of Joe Nikoden, partner of J. A. Brocklehurst in the Broen Corp., to develop jigs which speed up and perfectly standardize the assembly and fitting of the pieces which make up the guard. Jigs are the "hobby," the "kick" Joe Nikoden gets out of his fabricating business.

All Types of Guards

The range in sizes, types, gauges, weights, and degrees of complicacy of the guards made by Broen cover the whole field of guards—there are square, oblong, rectangular, many sided; there are tiny guards which protect a small gear and there are huge guards many feet in each dimension—and all of these are further complicated by louvres, cut-outs, openings, round and faced corners, with and without hinged or stationary covers, recesses and protrusions.

From very light gauge guards, items range up to $\frac{3}{16}$-inch, while a complementary line of "covers" go up to ½-inch thickness. On these covers Broen will turn flanges in the press, will drill holes on one of several drill presses and will arc weld the pieces into a finished cover.

Heaviest of all, Broen makes up fixtures and bases in ¾-inch plate, doing the cutting with the torch and making some forming operations, like rolling, on extra heavy machinery seldom found in a sheet metal shop.

Use a Complete Machine Shop

As this brief summary indicates a complete machine shop which would do credit to a strictly machine shop operator is an integral and busy part of the Broen set-up. There are several types and capacities of drill presses—one drill being the radial drill shown in a photograph drilling holes in heavy plate—there is also a gang drill capable of cutting one-inch plate and there are several small drill presses. A lathe finds many uses in making the jigs and also machining fabricated items.

The sheet metal working machinery is also varied and capable of working in heavy gauges Some of the machines are shown in the photographs and one especially interesting machine is the nibbler which will cut $\frac{3}{16}$-inch stock accurately to a template without curling any scrap or serrating any edges. This nibbler was made up in the Broen shop, the machine shop producing the head, bearings, eccentrics and the welding shop making the frame.

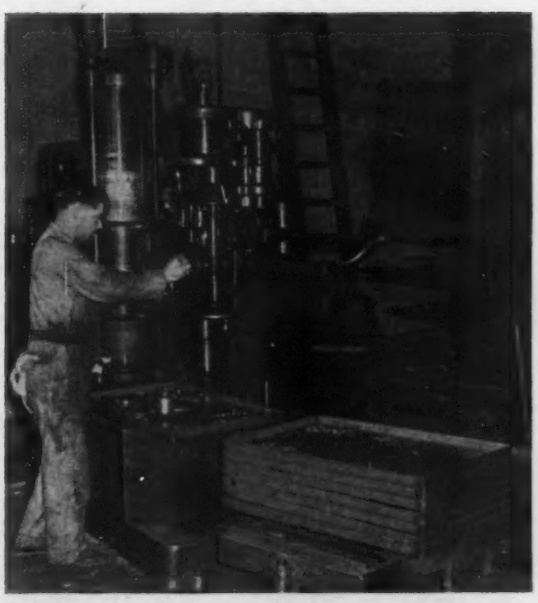
Jigs Made of Shop Scrap

These jigs produced for guards are ordinarily made of scrap stock, thick sections formed of plate welded together, all hold-downs lugs, spacers, etc., cut, formed and welded by Broen. A special jig store room in charge of a store-keeper keeps these jigs in orderly and tip-top condition ready at a moment's notice to start a job. Broen mechanics never have to rummage under dusty benches and in forgotten corners for a jig.

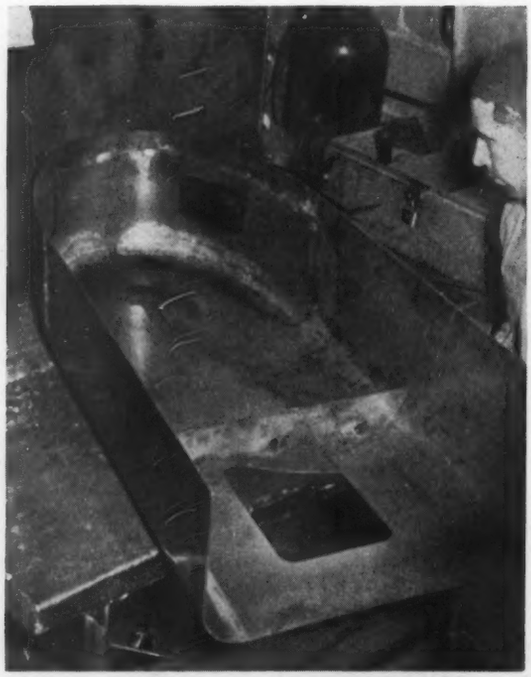
From the 100 varieties of guards produced by Broen, one guard—a chip pan for a vertical shell turning lathe—was selected to show the steps in production and the jigs used to standardize the units.

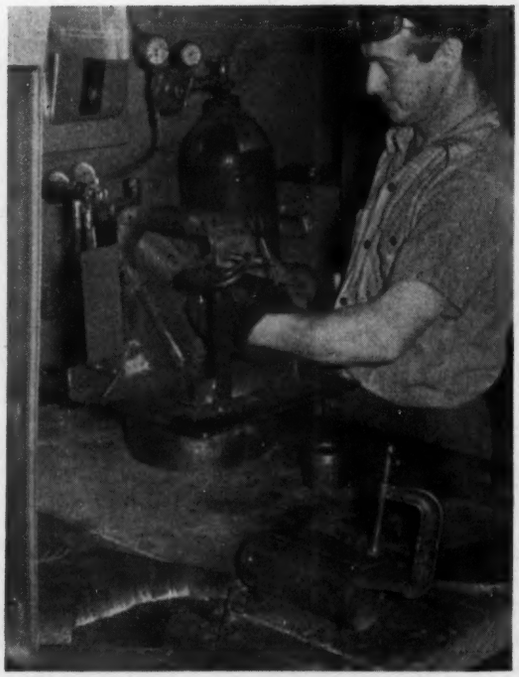
Production turns out five pieces—any one of which is quite a sheet metal problem by itself. The five pieces are shown in the photograph of a finished pan. This pan must be perfect because it has almost no clearance in the machine tool. Five complicated parts as shown would be an im-

◆



Top—This large radial drill is used to bore holes in ½-inch thick "covers." The truck has a stack of covers Broen has flanged and welded. Center—This heavy duty nibbler capable of working $\frac{3}{16}$-inch sheet was built complete in the Broen machine shop; even the head was built in the shop. Bottom—In the Broen sequence of operations the power press brake has numerous shop-made dies so that almost any radius of flange or bend can be turned in light or heavy material. The photographs show several varieties of press work.





Left—A two-piece guard. The sides and back are one piece; the round nose the second. The two pieces are put in a special jig and arc welded. Right—The mechanic has placed two pieces of a small guard in a special jig which aligns the pieces and holds them for flame welding. The jig is typical of the shop made jigs Broen uses for all items made in 100 pieces or more.

possible fitting-up job without the jig shown in two pictures. Because this pan is produced continuously in large numbers, the special table jig shown is worth its cost. Of importance in the jig are the numerous hinged clamps which can be thrown back to admit the pieces and then run down to hold each piece in exact alignment. Once the pieces are fitted up, the welder is able to make all his welds on the outside and in the flat so that the inside of the pan which goes up on the machine has smooth welds. Grinding is also simplified.

This jig serves two additional important functions. First, to fit into the jig each piece must be accurate and any inaccuracies in shearing or forming are readily discovered and can be corrected. Second, because the jig is substantial, small inaccuracies can be corrected by hammering the piece into a fit in the jig, thereby eliminating considerable minor reforming.

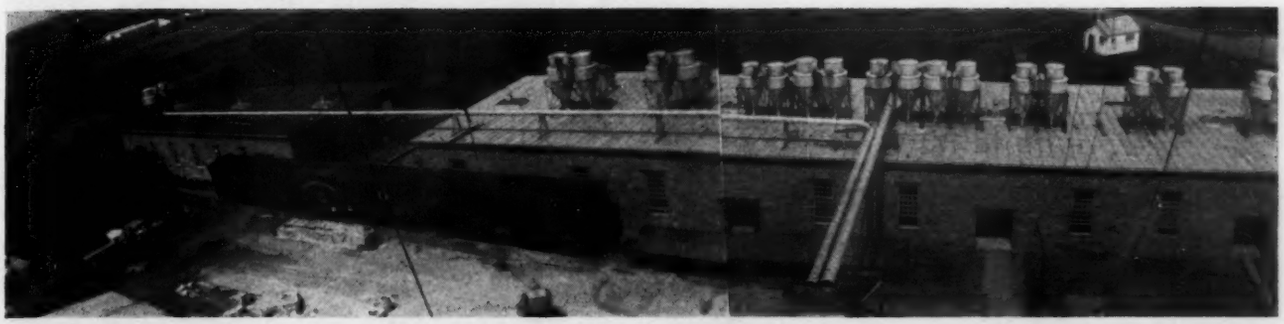
Broen's liking for jigs is tempered by an electric rule which suggests a jig for any item manufactured in more than 100 units. Any item produced in less than 100 units or fabricated at infrequent intervals does not warrant a jig and is, accordingly, produced on the bench by temporary means. Broen also points out that jigs need not be too complicated or expensive, if the fabricator has ingenuity enough to make up simple jigs in his own shop using scrap material.

This rule also applies to forming dies—standard items always in production warrant dies. These may be special dies for the item or oftentimes a standard Broen die can be substituted for some special request when explained to the customer.

The Broen Corp., as a partnership of J. A. Brocklehurst and Joe Nikoden, has been serving Detroit for more than four years. From the beginning, manufacturing has been the sole aim of the partners and no work that has to be erected outside of the shop has been or is now considered. In this specialty manufacturing field, the company has firmly established itself.

There's Scrap in Every Shop!

Waste from the shears, scrap from the snips, odds and ends of material saved for a day which probably never will come. Your benches, shelves, store rooms probably contain much scrap the blast furnaces need so badly. Why not make a real house-cleaning today!



General view of collectors on roof and the two conveyor lines which carry the waste straw to the factory power house boilers.

Cigarette Paper, Straw Collecting System

FORMERLY the majority of the special paper used by American companies in cigarette manufacturing was imported from France, but since the Nazi invasion of Europe eliminated this source of supply an American source of supply has been under development. As an example, the Smith Paper Company, Incorporated, who specialize in fine papers, undertook to and successfully developed American production methods to manufacture the required paper stocks here in the United States.

One of the basic materials required for this paper manufacture is a certain long fiber grain straw which was found to grow quite extensively in the grain growing sections of Minnesota. Therefore, a plant was established at Red Lake Falls for the reduction of this grain straw to extract the fibers suitable for paper manufacturing.

The processing of this straw to extract the fiber through various types of drying, shreading and breaking equipment creates very dirty and dusty atmospheric conditions in the working areas of the plant. All of this was of deep concern to the operators who were anxious to eliminate the polution of the plant atmosphere without poluting the outside atmosphere.

The Day Company, Minneapolis, was invited to study the problem and recommended a complete Day Dust Control System employing fourteen fan units, which through specially designed hoods and nozzles removes from the processing equipment 77,000 cubic feet of dust laden air per minute. Operating in conjunction with the rest of the equipment involved in the design, twenty-two Day patented Dual-Clone dust collectors were employed to extract the dust entrained in the air streams before exhausting the air to the outside atmosphere.

Some 75 per cent of approximately 125 tons of raw straw that is processed in the plant daily is a waste product, so the problem of collecting, conveying and disposing of this waste had to be provided for. Two pneumatic systems were employed to collect the waste from the various departments and deliver the waste to a power house where specially designed boilers converted the waste into steam and power to operate the plant.

After the completion of the fiber extraction process, the fiber is baled by modern methods and shipped in car loads to the paper mills where the straw fibers are mixed with various other ingredients and manufactured into the finished product.

Special collecting hoods above the shredding tables. No work is done on the tables so the hoods are only inches above the tables.

Day Company Dual-Clone collectors which separate some 95 tons of waste straw from inside air each day.

Fabricating War Products

[2 M Corps. Heating Items]

By Ernest E. Zideck
Sheet Metal Consulting Engineer

Among the hundreds of items made of light gauge sheet metal which the Quartermaster Corps has been buying are these four simple stove appurtenances. So far as we know, these items are bought at Jeffersonville, Indiana, QM Depot. Date, quantity, future prospects for buying—we don't know.

AMONG the sheet metal items that have been purchased by the Quartermaster Corps were the following: 1—improved spark arrester for wood burning stoves, principally for tents (Figs. 1 and 2); 2—tent stove pipe roof flange reaching over the central tent support (Fig. 3), so as to hold better in position on the flexible canvas and protect the hole in the canvas against rain; 3—handy stove pipe fastening device (Fig. 4) which would hold the joints together in stormy weather and when the stove is being shaken by long pieces of wood being fed into it; and, 4—stove guard constructed partly of fireproof fabric, the sheet metal posts serving for any size of guard (Fig. 5).

The four items are shown in drawings, complete, because their nature is well known to the sheet metal shop and they need no elaboration. Their construction follows the lines of the older types of roof flanges, stove pipes and products with which the trade is familiar. The improvements here shown and discussed are specifically wanted for military barracks and tents. Their use might be discontinued after the war. Still, the innovations disclose certain features which it might be well for the trade to retain, making use

Fig-3
Tent Roof Flange

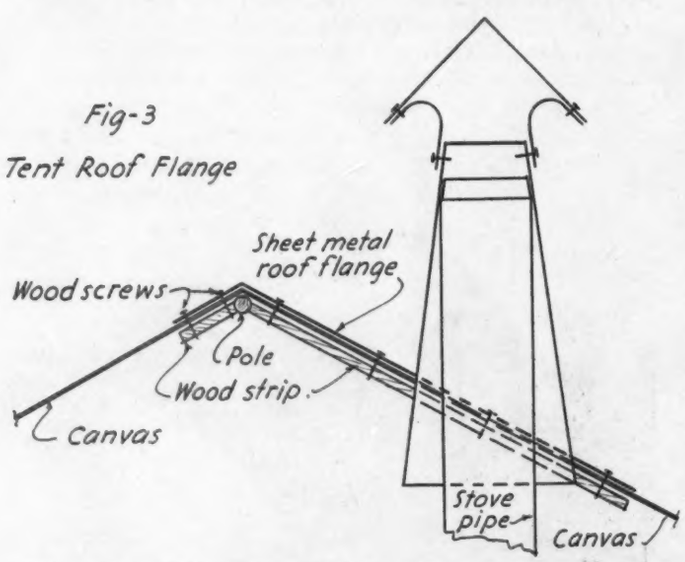
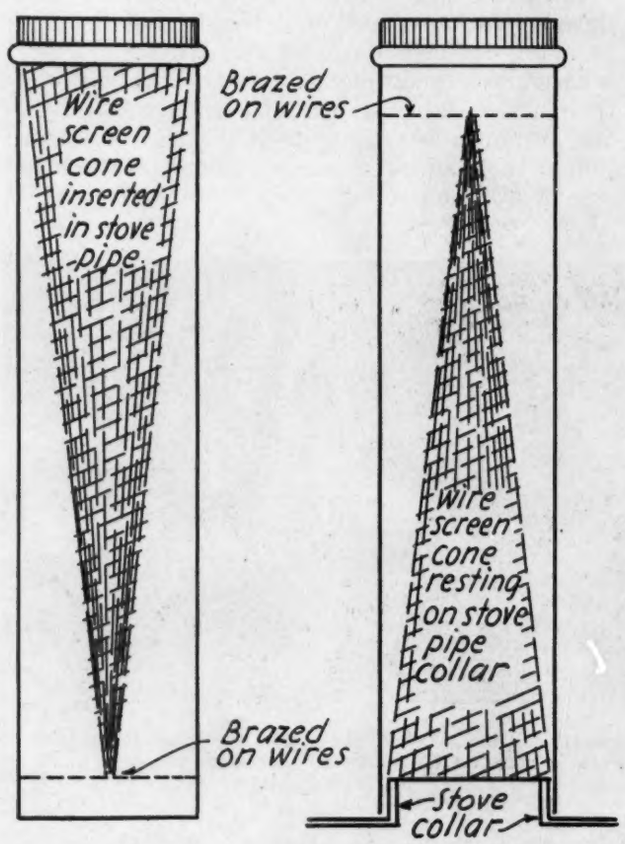


Fig. 1 Fig. 2
Spark Arresters


Wire screen cone inserted in stove pipe
Brazed on wires
Brazed on wires
Wire screen cone resting on stove pipe collar
Stove collar

The four sketches show specified Quartermaster Corps. items used in conjunction with stove heating in the army. Simplicity is the keynote of these constructions, especially Fig. 4.

Fig. 4
Stove Pipe Joint Fastening

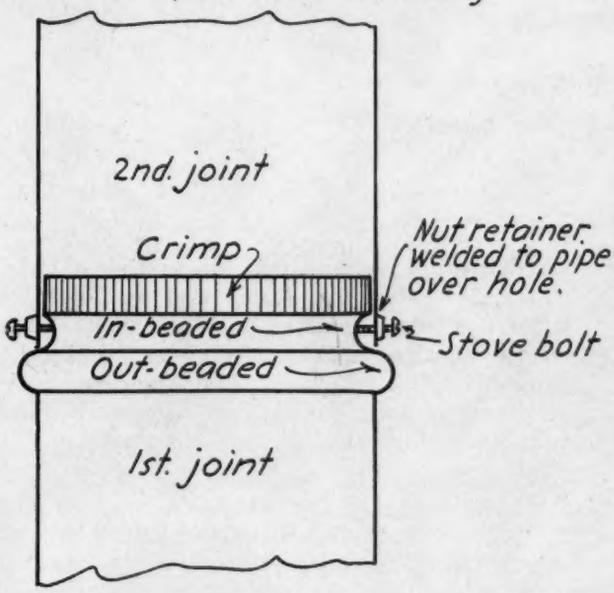
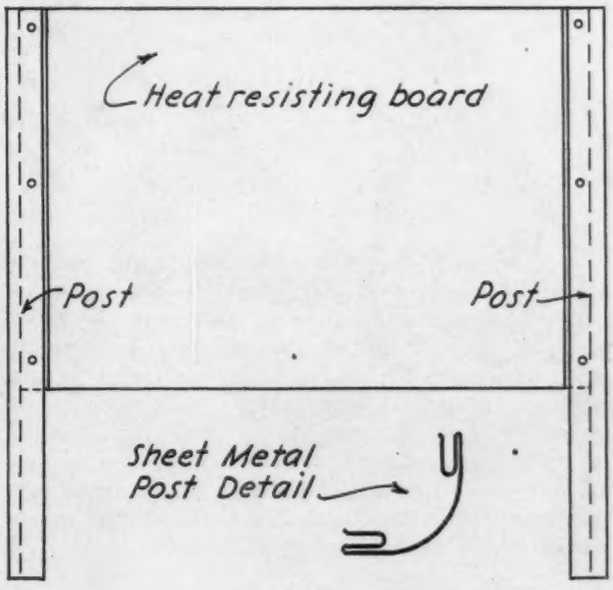


Fig. 5
Heater Guard (4-posts, 3-boards)



of them wherever they tend to solve an otherwise difficult problem, on old roofs possibly, in non-riveted horizontal pipe leads, in wood burning or short run smoke stacks through non-fireproof roofs, and in connection with heaters or floor furnaces.

The spark arrester shown in Figures 1 and 2 is made of 3/16 inch mesh wire screen. It extends conically through the whole length of the pipe joint and may be used to repose on the stove collar (Fig. 2) or, be suspended in the pipe (Fig. 1). In wood burning stoves the arrester is better placed on the stove collar because the fuel produces moist, longish soot which tends to fill in the mesh. By having the arrester near the flame in the stove the soot is burned as it hangs from the screen. In coal burning stoves the arrester placed in suspended position in the second or the third vertical joint is to be used.

The roof flange shown in Fig. 3 is self-explanatory. The metal reaches over the roof gable, and if the sheet is wide enough, there is no possibility of rain water getting under it, as is the case with a smoke stack roof flange covering a margin of the roof in which the hole was cut. By using this improved roof flange on tents, using inner reinforcements (wood strips) to fasten the metal to the canvas, we supply a fairly rainproof connection, at the same time providing a more rigid support for the protruding smoke pipe.

In constructing the smoke pipe shown in Fig. 4, we might need a special set of beading rollers fitting our machine, for the bolts threaded through the nuts in the retainers to reach into the bead. This method of fastening smoke pipe was devised principally for a hurried installation, with the short bolts provided in the nuts needing only a screw driver operation to fasten into the grooved bead, without regard for the position of the bolt in respect to the bead. The use of sheet metal screws was found less satisfactory in this connection because the pipe had to be moved around to find the holes, and furthermore, the sheet metal screws, having had no hold on the pipe, got lost in moving.

The heater guard shown in Fig. 5, was devised principally for use in barracks and tents because it can be easily taken apart and set up again, and it can be moved from place to place, knocked-down, taking up little space. The use of fireproof fabric between the posts was found advantageous for two reasons: (1), scarcity of metal; and (2), lesser likelihood of the men moving around the heater getting burned.

The four articles here shown are likely to be procured locally by the respective military authorities or barracks builders, and it is believed that general sheet metal shops in the vicinity of military camps may well be called upon to supply the needs. With the approach of the cold weather and need for heating the tents and the barracks, many of the hurriedly constructed camps and lodgings or housing will be needing one or the other of the items described. Especially where the men are housed in tents the need for spark arresters and pipe fastenings and guards and leakproof roof flanges will arise. And it is believed that the shop offering these items to local or near-by garrisons or suppliers will get the business, because neither of the items is a bona-fide mass article and its shipment from afar would greatly tax the present over-burdened shipping facilities.

It is not believed that anyone locality will have use for more than a few hundred of any one of the items under discussion. And as it would not pay to have special tools made for the job, except possibly the extra pair of beading rollers the

(*Continued on page* 96)

Round Ducts Save Metal

By F. R. Ellis
Buerkel & Company, Inc., Boston

WITH the war effort requiring the entire output of steel and other metals, it is of utmost importance to use all metals in the most efficient and economical manner. The sheet metal contractor can do his bit by using metal to the best advantage. One way that some saving can be made is in the use of round ducts in place of rectangular shapes. It will not always be possible to use round ducts because space conditions will not permit their use. But there will be many places where round ducts can be used.

How Round Pipes Save Metal

How will the use of round ducts in place of rectangular ones result in a saving of metal? Take an example—Suppose it has been decided to use a 48-inch x 12-inch duct to convey 4,000 cubic feet per minute at 1,000 feet velocity per minute (See Fig. 1). Next change this to a 24-inch x 24-inch which has the same cross sectional area; then consider a 27-inch diameter duct which has almost the same cross sectional area.

Below is what will be found as regards the perimeter of these ducts, allowance for seams not being included. Listed also is the pressure drop or friction in inches water gauge when 4,000 cubic feet per minute flow through 100 feet of these three ducts.

TABLE 1

Area (Sq. Ft.)	4.0	4.0	3.976
Velocity (FPM)	1,000	1,000	1,010
Volume (CFM)	4,000	4,000	4,000
Perimeter (Inches)	120	96	84.82
% Saving	...	20%	29.3%
Friction Per 100'	0.09 w g	0.068"	0.06"

Is not a saving in metal of 20 to 30 per cent worth while? Add to this the further saving in material needed for seams and stiffeners, the latter not being required on round ducts. There is still another factor to consider; that is, the gauge of metal required. The American Society of Heating and Ventilating Engineers recommends the following gauges for ducts of these sizes:

TABLE 2
U. S. STANDARD GAGE

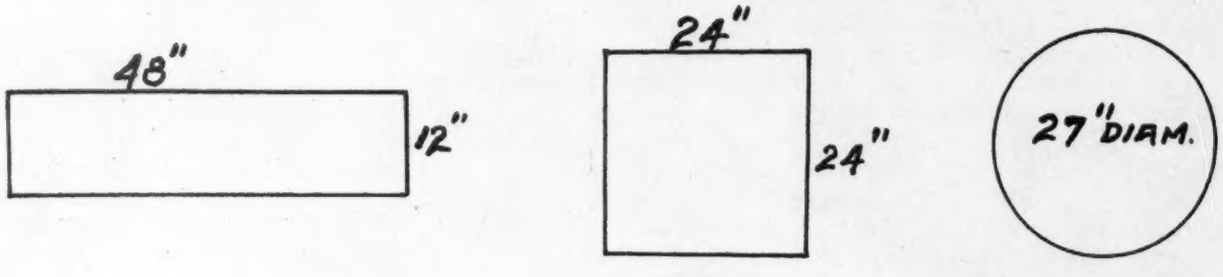
Duct	48-Inch Long Side	24-Inch Long Side	27-Inch Rd
Sheets Not Cross Broken	20	22	24
Sheets Cross Broken	22	24	..
Stiffeners	1¼"	None	None

Refer now to the friction (Table 1) when the velocity is the same in all three ducts and note that the fan will only have to operate against two thirds of the pressure when discharging through a round duct as compared to the flat one. Here then is another place when the sheet metal contractor can help by designing his systems to use the least power. Transportation of fuel for power is one of the big jobs for the railroads, and every gallon of oil or pound of coal saved is a help. The power companies are doing a wonderful job, but why not help by using power to the best advantage.

The foregoing basis of the friction for rectangular ducts as compared to round is determined from what is called the hydraulic mean radius. It is necessary to convert rectangular ducts to the equivalent diameter round in order to determine from the usual duct chart the friction of the rectangular duct. Most friction charts are developed for round ducts.

The equivalent round duct that will have the

FIG. 1



Round ducts in commercial systems may not be practicable because of appearance, but, today, with duct installation pretty well confined to industrial work, appearance is no longer a major factor so round ducts which save metal and lower installation costs should be recommended wherever possible. The author explains the material savings and design economies.

same friction when the velocity through it is the same as that in the rectangular duct is given by the formula:

$$D_e = \frac{2\ (A\ B)}{A + B}$$

when D_e is the diameter of the equivalent round duct, A & B the long and short side of the rectangular duct. If you go back to the example, in Table 1 you will find that for the 24-inch x 24-inch the equivalent round is 24-inch diameter and for the 48-inch x 12-inch it is 19.2.

Do not confuse these equivalent diameters as being the sizes of the round ducts you would use in place of the 24-inch x 24-inch, or the 48-inch x 12-inch. These are merely the sizes that have the same friction at the same velocity but do not handle the same amount of air.

From the generally used friction chart it will be found that a 1,000 foot velocity in a 24-inch duct is 0.067-inch wg per 100 ft. of duct and for this same velocity in a 19.2-inch diameter duct, the friction is 0.09-inch wg per 100 feet.

You will note that the friction for a given velocity increases as the duct diameter decreases; that is why it is common practice to reduce the velocity as the ducts get smaller.

Sizing to Equal Friction Best

The foregoing explanation was given because many duct designers size their ducts on a velocity basis. This is not the best method as it usually results in velocities too low in large ducts and a waste of sheet metal by having ducts over sized and it usually means too high velocity in small ducts with an excessive friction and a waste of power. Small ducts can be made enough larger without the use of much extra metal. It is better to size ducts on a friction basis. By this is meant sizing the ducts to have the same friction per unit of length, for all sizes and shapes in a given system. This requires the use of a chart or tables.

This method changes the basis of determining the equivalent round duct for a given rectangular because the consideration is no longer that of equal velocity but that of equal air volume flowing through the ducts or, as it is usually called, equal carrying capacity. For this basis the equation for the equivalent diameter duct for a given rectangular duct is:

$$De = 1.265\ \sqrt[5]{\frac{(A\ B)^3}{A + B}}.$$

This is a formidable looking equation but need not be alarming because most engineering references books and many fan manufacturers' catalogs give tables of the equivalent diameter of round ducts for various widths and heights of rectangular ducts.

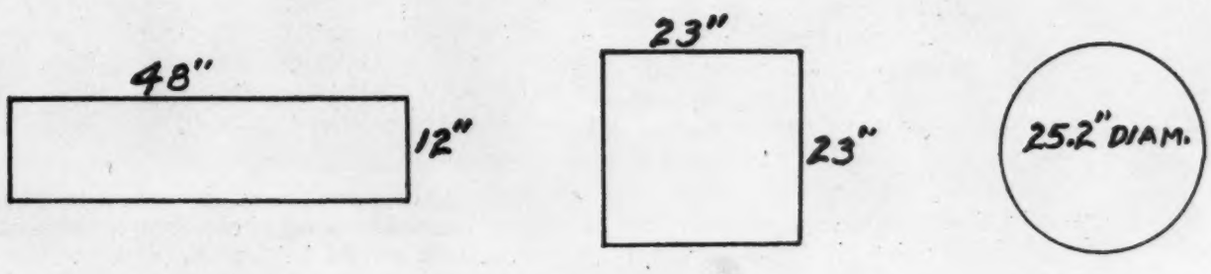
Consider again the original example of the 48-inch x 12-inch duct and use the 0.09-inch water gauge as the friction per 100 feet for all these ducts. The equivalent square and round ducts for handling the 4,000 cubic feet per minute with same friction would be as follows:

FIG. 2

Friction Per 100 Ft.	0.09"	0.09"	0.09"
Area Sq. Foot	4	3.7	3.5
Velocity (FPM)	1,000	1,080	1,145
Volume (CFM)	4,000	4,000	4,000
Perimeter Inches	120	92	79
% Saving	...	23.2	34

From this table it will be seen that the rectangular or round duct can be reduced in cross section area with a resultant higher velocity, but with no greater friction than would result with the flat duct. Hence with the same frictions the same saving in metal is greater than when the ducts are sized for equal velocity.

FIG. 2



Keep Your Arc Welders Welding

By R. F. Wyer
Welding Engineer
General Electric Company

Blowing dust out of the welder should be done carefully and with low pressure air to avoid driving dust into the insulation.

WHILE arc welding sets today represent a high degree of simplicity and reliability, they do require periodic attention from a maintenance standpoint if they are to be kept in the best operating condition.

Periodic Inspection

A systematic and periodic inspection of motors and generators is necessary to insure best operation. While some welders are installed where conditions are ideal—where dust, dirt, and moisture are not present to an appreciable degree—most machines are located where some sort of dirt accumulates on the windings. This lowers insulation resistance and cuts down creepage distances.

Steel dusts are usually highly conductive, if not abrasive, and lessen creepage distances. Other dusts are highly abrasive and actually cut the insulation in being carried through by the ventilating air. Fine cast-iron dust quickly penetrates most insulating materials.

Hence the desirability of inspecting motors periodically. If conditions are extremely severe, weekly inspection and partial cleaning are desirable. Most motors require a complete overhauling and thorough cleaning about once a year.

Once a Week

For the weekly cleaning, the motor and generator should be blown out with dry compressed air (about 25 to 30 pounds per square inch in pressure). Where conducting and abrasive dusts are present, even lower pressure may be necessary, and suction is to be preferred, as damage can easily be caused by blowing the dust and metal chips into the insulation. On most motors the windings are fairly accessible, however, and the air can be properly directed to prevent such damage.

Once a Year

About once a year, welders should be overhauled. First, the heavy dirt and grease should be removed with a heavy, stiff brush, wooden or fiber scrapers, and cloths. Rifle-cleaning bristle brushes can be used in air ducts. Dry dust and dirt can be blown off, using dry compressed air at moderate pressure. Care must be taken to direct the air so that the dust will not cause damage and will not be pocketed in the various corners. Grease, oil, and sticky dirt are easily removed by applying cleaning liquids such as carbon tetrachloride.

If the welder can be spared from service long enough, the insulation of the motor should be dried out by heating to from 90 to 100 C. While the motor is still warm, a high-grade insulating varnish should be applied.

The varnish may be sprayed or brushed on. After applying the varnish, the best results are obtained by baking for 6 to 7 hours at about 100 C. If the machine must be put back into service quickly, or if facilities are not available for baking, fairly good results will be obtained by applying one of the varnishes which dry in a few hours at ordinary room temperatures.

Lubrication

Manufacturers' instructions regarding lubrication of bearings should be carefully noted. These instructions should be kept near the welder so

that they are readily accessible. Usually grease-packed bearings have sufficient lubricant when shipped from the factory to last about a year under normal conditions of cleanliness and temperature. When sets are operated in unusually dirty atmospheres, run continuously 24 hours per day, or exposed to extremes of temperature, it would be well to shorten the bearing inspection and lubrication intervals down to six months, or less if experience warrants. An occasional check of bearing temperature by feeling with the hand may disclose undue heating before damage is actually done. Once a lubricating routine has been established, it should be carried out, and by reliable men who will follow instructions.

It is pretty generally established that outside of gross neglect for long periods of time, the major causes of bearing troubles are overgreasing and dirt. Overgreasing results in excessive heating of the bearing, frequently with churning and breaking down of the grease with consequent loss of its protective qualities.

Dirt occasionally gets into a bearing through the use of grease that is carried around or stored in uncovered containers. Quite as frequently it gets in through carelessness in protecting parts while bearings are disassembled or opened for inspection. The prevention is obvious but often overlooked:

1. Every part of a bearing assembly, including retainer plates, gaskets, and screws, should be placed in a clean box immediately on removal, and if dropped or otherwise soiled, should not be replaced without a thorough cleaning in a suitable solvent.
2. None but clean hands, tools, and rags should ever be allowed to touch a bearing.
3. Grease *must* be clean. If there is the slightest doubt of its purity, it should be thrown away. Grease is cheap compared with bearings and lost man-hours.

Sanding the brushes to a good fit with the commutator is essential whenever new brushes are installed.

Use hand operated guns to grease bearings and add grease slowly to permit excess to vent from the relief plug.

Only a high grade of grease should be used for ball-bearing lubrication.

Brushes

Brush inspection is important. The first essential requirement for the satisfactory operation of brushes is the free movement of the brushes in their holders. Uniform brush pressure also is necessary to assure equal current distribution. Adjustment of brush holders should be set so that the face of the holder is approximately ⅛ inch up from the commutator; any distance greater than ⅛ inch may cause brushes to wedge, resulting in chattering and excessive sparking.

It is essential that the correct grade of brush for a specific application be used. Recommendations as to the correct grade of brush should be obtained from the manufacturer of the welder only.

Broken brushes imply two possibilities: incorrect brush grade, or mechanical defects (such as unbalanced, rough, or eccentric commutator). To eliminate brush breakage, both factors should be corrected.

Check the brushes to make sure that they will not wear down too far before the next inspection. Keep extra sets of brushes available so that replacement can be made when needed. It is false economy to use brushes down to the absolute minimum length before replacement. Cases have been known where brushes have worn down until the metal, where the pigtail connects to the brush, was touching the commutator. This, of course, was causing damage to the commutator.

(*Continued on page* 84)

Refinishing Smoke Tarnished Stainless

American Artisan.
Gentlemen:

Last week we had a very disaastrous fire here in Sheridan and one of the sections of the building destroyed contained a restaurant in which part of the equipment is made of stainless steel.

We have this equipment in our plant now, and while it has not been burned, it is very badly discolored from smoke and we are wondering if you could advise us of some particular method to use in refinishing this material to its original state at the least possible cost.

Any information you can give us will be greatly appreciated.

Signed—A Reader.

Reply by
Allegheny Ludlum Steel Corporation:

We are assuming that by the term "stainless steel" you are referring either to the 18-8 chromium nickel analysis which we produce under the name Allegheny Metal 18-8 or to the straight chromium analysis containing approximately 17 per cent chromium, which alloy we also produce as Allegheny Metal 17.

The selection of a method will depend upon the degree to which the discoloration has taken place. For light stains, scrubbing with a material like Bon Ami, using a stainless steel sponge, might suffice. We mention the stainless steel sponge, having in mind that anything that is used for scrubbing should be free of iron; otherwise, any residue of iron left on stainless might ultimately produce rust.

For somewhat heavier stains, possibly swabbing with a 10 per cent nitric acid solution at about 140° F. might be more helpful. If this is used, care should be taken to avoid getting the acid on any other parts or accessories that may be attached. The use of this acid should be followed by a thorough water wash.

If the discoloration has progressed so far that these treatments will not be found helpful, the next step would be to employ polishing wheels or paper carrying about a 200 grit.

If the material was of the chromium nickel analysis—not the straight chromium analysis—and if it has been held at around 1000° F. for any appreciable length of time, then it is possible that carbide precipitation may have occurred to some extent, in which case its ability to resist corrosion might be affected. However, based on your letter, we do not believe that this is the case.

Reply by
Carnegie-Illinois Steel Co.:

If the stainless steel equipment has been badly discolored by smoke, it may be cleaned by the vigorous use of Bon Ami or other similar mild abrasive.

If the discoloration has been more serious than that of mere smoke, the use of an iron-free emery of about 320 grit, mixed with light machine oil, and vigorously rubbed in one direction (preferably in the direction of original grinding or polishing) followed by a thorough wash with soap and hot water, should renew the finish.

There is on the market a material known as NuSteel, sold by the Scully Steel Products Company, which can be used to renew the surface of the discolored equipment. This product is entirely water soluble and it is suggested in its use that a minimum amount be applied to the surface to be cleaned and then vigorously rubbed with a cleaning cloth, following the direction of original polishing until the surface has been cleaned. The excess material can readily be removed by the use of clean hot water.

Reply by
Pynosol Laboratories, Inc.:

This bulletin has been prepared to assist in the power and manual cleaning, polishing and final finishing of various fabricated metals. The following procedures described have given satisfactory results under varied conditions in the fabrication and maintenance of metals and metal alloys. They are presented as a guide, but tests should be made and the procedure modified to meet the individual requirements.

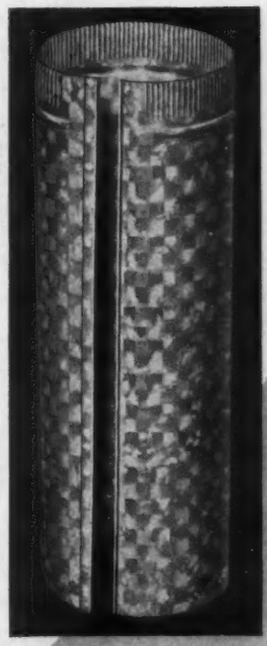
NuSteel is a soft paste containing no free acid, free alkali, caustic or harsh abrasives, nor any substance injurious to metal, plastic, enameled surfaces or the hands.

NuSteel removes "Superficial Stains" and de-

(*Continued on page* 85)

A Challenge . . .

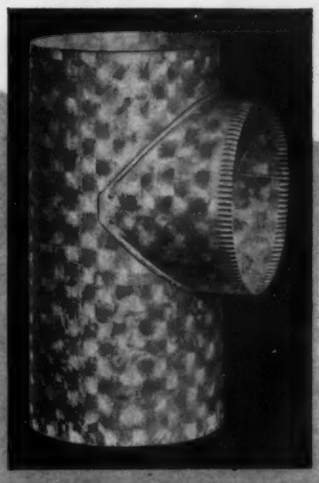
YOU WILL WANT TO MEET

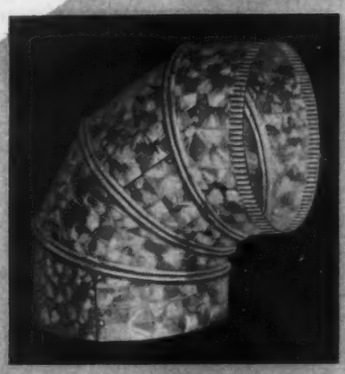


Among the responsibilities which you and we assumed when we became a part of the sheet metal industry was that of helping to keep American home fires burning by maintaining the country's heating plants in A-1 condition. For years, both of us have found this relatively easy to do.

Today—far more than in peace times—it is important to keep furnaces efficient in order to guard the nation's health and to conserve fuel. But, this is no easy thing to do. For example, the output of smoke pipe is limited to the tonnage of sheets which the government assigns for such products and, naturally, this is far short of our normal needs. Moreover, army camps, defense housing projects, etc. rightly have first call on all types of heating equipment which further curtails our civilian use.

This situation is a challenge to your resourcefulness and ours. We can meet it by conserving metals—using them only where absolutely necessary—repairing with non-strategic materials wherever possible. Yes—this is a difficult job—but we're confident that the sheet metal industry is capable of meeting it with colors flying.





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Priority Questions and Answers

Converting Oil To Coal

THE following explanations, in question and answer form, have been issued by the Plumbing and Heating Branch of the War Production Board to answer some of the questions which have arisen in connection with the conversion of fuel oil burners to coal:

Q. I have an oil burner type furnace which cannot be converted through the use of grates. Can I buy a new furnace that will burn coal, and have it installed?

A. No. A new furnace cannot be sold except to defense manufacturing plants and others having priority ratings (A-10 or better). Persons who have a furnace that can't be converted should take steps to conserve fuel oil by insulation, etc.

Q. My oil burner is old, and very inefficient. Can I buy a new oil burner, and thus save oil?

A. No, the sale of new oil burners is restricted to rated orders. Furthermore, in many states, a WPB Order L-56, prohibits the sale of oil to new equipment. L-56 controls the sale of fuel oil in the following states: Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Nebraska New Hampshire, New Jersey, New York, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Vermont, Virginia, West Virginia, Wisconsin, and the District of Columbia, and Washington and Oregon.

As explained in this issue, fuel oil is to be rationed in the following states for heating purposes: Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, New Hampshire, New Jersey, New York, North Carolina, North Dakota, Ohio, Pennsylvania, Rhode Island, South Carolina, South Dakota, Vermont, Virginia, West Virginia, Wisconsin, and the District of Columbia.

Q. Where can I get a set of grates?

A. Get in touch with your local heating dealer or contractor.

Q. I have ordered a set of grates from my dealer, but he tells me that he cannot get them unless I file papers and get a priority rating. Do I need a priority rating?

A. No priority rating is needed to secure grates. A distributor, jobber, or wholesaler may purchase grates, stoker bars, fire doors, etc., for conversion without a priority rating. In turn, these may be sold to home and building owners, and to plumbing or oil dealers without any rating.

Q. I have a rating on a stoker application, but my supplier tells me that the manufacturer refuses to ship the stoker unless he gets a higher rating. What should I do.

A. The rating which you received gives you a place on the manufacturer's shipping schedule. It may be that you will have to wait sometime for the equipment, other orders with higher ratings, provided he has the but the manufacturer has to fill your order after filling material to build it.

Q. Can I convert my oil burner to gas?

A. No. The sale of gas burning equipment is restricted by a WPB order (L-79, as amended) to rated orders (see AA, June, 1942, page 20).

Q. My oil burner is so installed that I get my domestic hot water supply from it. If I convert to coal, what can I do about this?

A. This matter should be taken up with your local plumber or heating contractor. It may be that by converting you will not get as much hot water. However, you will be assured of an adequate supply of heat, which is more important.

Q. How can a conversion job be financed?

A. Conversion jobs have been removed from the credit-time restrictions of the Federal Reserve Board. Owners now can apply to a local bank and arrange to finance the cost of the conversion.

Dealer and Wholesaler Questions

Q. I am in the heating business and want to buy some grates, but my jobbing house will not sell them to me without a preference rating. What should I do?

A. The sale of grates is not restricted and no rating is necessary. If you will let us have the name of your jobber, we will be glad to call him up and explain this to him.

Q. Can I use Order P-84 to get grates for conversion?

A. No. You do not need any preference rating to buy these grates. P-84 is only to be used for replacement and repair purposes.

Q. I want to put a new furnace in to replace an oil burning type furnace that cannot be converted. They tell me I need a perference rating. Order L-79 says, "Nothing in this order shall be construed to limit the sale or delivery of any equipment which is to be used for the purpose of converting oil burning equipment or gas burning equipment." Why, then, do I need a preference rating?

A. The provision quoted refers to grate equipment, and similar items such as shaker bars, firing tools, etc. It does not apply to the various items defined as new metal heating equipment.

Q. I am a wholesaler. If I sell my grate stock without ratings, how am I going to replace it?

A. You may file a special form (PD-IX) showing what ratings you have on grate stock for replacement and repair and showing the balance as grate oil conversion sales.

Q. I want to put a stoker on a job to convert from oil to coal. The stoker manufacturer tells me that he needs a preference rating. I thought that stokers could be sold without preference ratings.

A. If a stoker has a capacity of less than sixty pounds per hour, a rating is not needed to get it. If over sixty pounds, the manufacturer has to have the

(*Continued on page* 90)

Have You Checked Your Present Status under

The Federal Wage and Hour Law

EVEN before Pearl Harbor, contractors in the sheet metal trade and related fields, like employers in many other sections of industry, were faced with numerous problems. Some materials already were getting scarce. Priorities and the pressure of rush jobs were giving metal men plenty of headaches.

And since the war started, new difficulties daily are descending on the industry. Because of war needs, some shops have had to abandon their former activities completely. Nevertheless, these artisans can point with pride to a fine record of new installations and satisfactory maintenance and repair work.

Active participation in America's war effort undoubtedly has changed the status of many contractors under the Fair Labor Standards Act. Usually called the Federal Wage and Hour Law, this statute provides that employees engaged in interstate commerce or in the production of goods for interstate commerce, unless specifically exempted by the Act, must be paid at least 30 cents an hour and at least time and a half their regular rate of pay for all hours worked beyond 40 a week. There is no limitation on the number of hours employees may work, provided "overtime begins at 40."

(Employers holding certain Government contracts are reminded that they may be subject to the Walsh-Healey Public Contracts Act. This statute generally requires payment of time and one half for hours worked beyond 8 in any consecutive 24, or beyond 40 hours in any workweek.

(The Walsh-Healey Act prescribes labor standards in the execution of contracts made by the United States "for the manufacture or furnishing of materials, supplies, or equipment, in any amount exceeding $10,000." In general, the Walsh-Healey Act does not apply to supervisory employees.

Some Agreements Permit 56 Hours a Week Without Overtime

(Overtime provisions of both the Fair Labor Standards Act and the Public Contracts Act may be relaxed when employers and employees operate under agreements, made as a result of collective bargaining by representatives of employees certified as bona fide by the National Labor Relations Board, limiting employees to 1000 hours of work in any period of 26 consecutive weeks or providing for employment on an annual basis but for not more than 2080 hours of work during any period of 52 consecutive weeks. Employees covered by either of these agreements may work 12 hours in any workday or up to 56 hours in any workweek before overtime payment at the rate of time and a half is required.)

Regular readers of AMERICAN ARTISAN generally are familiar with the basic provisions of the Wage and Hour Law. They also know in a general way how these requirements apply to metal contractors. Some questions have been submitted by employers in the field to the Wage and Hour Division of the U. S. Department of Labor. And while no single article could be offered as a complete Wage-Hour encyclopedia, it is believed that many readers will find answers to their questions here. Of course, inspectors of the Wage and Hour Division always will be guided by the facts found in each case.

"New" Buildings Not Under Law

It is the opinion of the Wage and Hour Division that employees engaged in the *original* construction of buildings normally are not covered by the Act, even if the building when completed will be used to produce goods for interstate commerce. Similarly, employees of metal contractors at work on such buildings during the course of original construction generally will not come within the scope of the Act. Where, however, the metal firm operates in more states than one, coverage exists for employees in the central office, whose duties relate to such multi-state operations, and for branch or field office workers engaged in the interstate phases of the firm's activities.

Maintenance, Repair Are Under Law

Employees of contractors who are engaged in maintenance, repair, or reconstruction work on existing buildings or machinery already in use to produce goods for interstate commerce, or who are otherwise engaged in interstate commerce or in the production of goods for interstate commerce, *are within* the general coverage of the Act. Work such as duct fabrication and installation, the application of roofing materials and the like, for dwelling houses, apartments, churches, schools, and other buildings not used to produce goods for commerce, in itself would not bring a contractor's employees within the coverage of the Act.

With these general principles in mind, let us see how the Fair Labor Standards Act applies in specific instances. An Illinois sheet metal contractor handles duct installations both in residential and in business structures:

"Most of my work is for industrial concerns that manufacture and ship goods out of the

state," he writes, "But I also do other jobs as well. A breakdown of my last year's business would look about like this:

"Installations in new industrial plants	$15,000
Re-roofing job on Boulevard Church	1,000
Miscellaneous repair jobs on residential property	3,200
Various jobs in remodeled industrial plants	7,600

"Where do I stand," he asks, "so far as the Wage and Hour Law is concerned"

Before analyzing his breakdown it should be noted that the Wage and Hour Law takes as its standard a *workweek,* which may be any seven consecutive days on which the week's work regularly is based. It frequently happens, therefore, that employees during some weeks may perform work which is covered by the Act and during other weeks may engage in work that is outside the scope of the Act. This is particularly true of sheet metal and allied contracting where employees work on a wide variety of jobs during each year.

The Illinois contractor is no exception. During those workweeks when his employees were engaged *exclusively* in *original* construction and fabrication for new buildings they would not normally be covered by the Wage and Hour Law, nor while they were doing repair or maintenance jobs on residential property or churches, schools, and the like.

Therefore, employees of this contractor were covered by the Act *only for weeks during which they installed equipment or did other work in existing plants that produced goods for interstate commerce*—the great probability is that coverage existed during most of the jobs on that final $7,600 item.

When You Do New and Old Building Work

When an employee performs both types of work (covered and not covered) in a single workweek, the Wage and Hour Division is of the opinion that he is covered for the entire week and must be paid in full accordance with both the minimum wage and maximum hour provisions.

An Ohio contractor who does sheet metal work for a number of industrial concerns asked, "If I do a roofing job on a plant that is shut down temporarily, are my employees covered by the Wage and Hour Law?"

If the plant produces goods for interstate commerce the roofing contractor's employees will be covered while they are on that particular job. Coverage is indicated, too, where repair or construction work takes place during the so-called "dead" season. Canneries and sugar mills, for example, usually undertake such work during their off-seasons.

An Indiana contractor raised an interesting question. He did considerable metal work on a plant which had been producing for commerce but which now had shut down permanently. After its reconstruction the building was no longer used for productive purposes—it served as a gymnasium. Were the contractor's employees covered by the Wage and Hour Law during that job?

They would not be covered, unless they also had engaged in other activities which would bring them under the Act.

Out-of-state Work

The head of a Wisconsin contracting firm that frequently does work in a nearby Iowa community wants to know if this interstate work brings his employees within the coverage of the Wage and Hour Law. Employees engaged in transporting goods, machinery, or materials across state lines, or engaged in other interstate activities, would come under the Act.

For instance, where a concern operating in several states maintains a central office from which these operations are directed, employees working in the central office would be within the general coverage of the Act as already mentioned.

A Missouri contractor asked this question: "I installed an air conditioning system in a new plant now producing munitions. Do my employees come under the Wage and Hour Law when they are called on to service the system?" The Wage and Hour Division believes that workers called in to repair or service machinery or other equipment in operation in plants that are producing goods for interstate commerce themselves are contributing to the production of goods for interstate commerce. Consequently, the Division says, such maintenance workers are covered by the Act.

New Building at Old Building

A number of contractors find it difficult to draw the line between "original construction" of a new building and "reconstruction" of an old building, especially on a site adjacent to an existing structure. If the new structure is physically segregated from the old, the Wage and Hour Division will regard such work as original construction. This also will be true where employees put up a new annex with walls adjacent to an old building, unless the addition is an insignificant structure such as a lean-to, small platform, or cupola.

The above illustrations indicate the general principles that govern application of the Fair Labor Standards Act to employees in sheet metal contracting and allied fields. The list of examples is by no means all-inclusive. Work in this field is so diversified and generally so closely allied with the construction industry as a whole that no rule of thumb can be given which will apply in every situation.

But if readers will bear in mind the fact that the status of employees may vary from week to week—depending upon the nature of the job—they should be able to apply these principles in most cases. Where doubt about coverage exists, employers are urged to consult the nearest field or regional office of the Wage and Hour Division.

(*Continued on page* 95)

Association Activities

NWAH&AC December Meeting

The Silver Anniversary of the Warm Air Research Program in cooperation with the University of Illinois is to be celebrated at the annual convention of the National Warm Air Heating and Air Conditioning Association to be held at the Hotel Cleveland, Cleveland, Ohio, December 8th & 9th, 1942.

Dr. Arthur Cutts Willard, President of the University of Illinois, will be the guest speaker and will speak informally on the historic occasion of the Silver Anniversary of our Warm Air Research Program. It was Dr. Willard who through his perseverance, foresight, and judgment became the prime mover in moulding the relationships of the University of Illinois and the National Warm Air Heating Association in the development of the Warm Air Research Program.

Dr. Willard Guest Speaker

Twenty-five years ago, Dr. Willard was then Professor of Heating and Ventilating and head of the Department of Mechanical Engineering at the University of Illinois and a few years later became the Dean of that department and in 1934 was chosen President of the University. Dr. Willard is the Father of our Reseearch Program and through his cooperation, the University and the Officers and members of our Association began a cooperative program of research by an industry which even today stands almost alone in its outstanding accomplishments. Comparatively few industries have sponsored a technical research program without interruption for twenty-five years. Yet that is the accomplishment of the National Warm Air Heating and Air Conditioning Association in cooperation with the University of Illinois. The Warm Air Research Program was born and initiated during the first world war and that program has been continuous during both good years and bad years.

At our Convention a full half-day will be given over to the historical background of our Association and following Dr. Willard we will hear from our old friends, Professors Kratz and Konzo who will give us more or less details covering our Research Program to date.

Following the Professors, W. G. Wise who was a Vice President of our Association 25 years ago and I. L. Jones who was Treasurer at that time (both have been Presidents of our Association since that time) will make brief talks giving a few of the intimate and interesting details surrounding the acceptance of the University's proposal to initiate a Warm Air Research Program.

History of Association

Then immediately following, one of the oldest friends of the industry and the one who was responsible for coordinating its many successful activities, will appear on the program and this man is none other than Allen W. Williams, our former Managing Director. Allen Williams has just recently completed a History of the National Warm Air Heating and Air Conditioning Association. It is complete, interesting and informative and he will give us a brief outline of the history which he has written.

Fred G. Sedgwick, Chairman of our Research Advisory Committee will speak, summarizing the benefits of our Research Program in its effects on consumers, members of the Association and the industry.

A substantial part of our Convention time will be set aside for talks in connection with Post War Plans in general and specifically in connection with the warm air industry. In this connection we will have one or two government men on the program as well as men of industry. We will also have a government representative who can give us information regarding government plans for our industry and who can answer questions.

Entertainment will be modest to fit the times and in this connection we are pleased to announce that E. B. Lau has accepted our invitation to show the techni-color movies of his hunting trip in Alaska about a year ago. President Sharp has appointed George Auer as Chairman of the Cleveland Entertainment Committee which is now going into action and arranging plans for entertainment.

Our entire convention program will surely prove to be a sounding board in connection with not only our important current problems, but as a guide to our industry's activities in connection with plans for the Post War and for the members of our Post War Planning Committee which committee will be selected before the convention and announcement made at the Convention.

What our Association does with its time and effort during the war period will favorably or unfavorably influence our industry's relative position compared to other industries when peace comes. The efforts of the entire industry including our Association over the years is symbolized in the approximate 10,000,000 furnace installations throughout our country. We would sacrifice much of this basic heritage if we, as an Association representing the industry, would fail to use our best efforts to solve insofar as possible the complex problems which are bound to arise in the post war era.

Make your plans now to attend this very important convention—make your room reservations early. Rates at the Cleveland Hotel start at $3.00 single and up.

George Boeddener, Man. Dir.

◆

Pennsylvania Auxiliary

Adam W. Tritsch, president of the Distributors' and Salesmen's Auxiliary of the Sheet Metal Contractors' Association of Pennsylvania in a letter to the members with tentative plans, urges that members learn all they can about allocation, priorities and government regulations; talk optimistic and cheerful; give all the leads and tips possible, be observant, and help our industry to do its part in the war program.

At the annual meeting in Erie in July, the following officers were elected:

President—Adam W. Tritsch
Vice President—Joe Proie
Secretary-Treasurer—Harry S. Criswell
Trustee—Ed. Reed, William Gowern, Tom McCombs, J. R. Roberts. J. F. Schwartz

President Trisch extends greetings and hopes that he and other officers can be of service to their members and the sheet metal, roofing and heating industry.

At the annual meeting, the following matters of interest were authorized:

(1) That we buy up to $500 in war bonds
(2) That we waive the dues for 1942-43 and each member be sent a paid-up-due-card for that period
(3) That we have a salesmen's auxiliary meeting sometime in late November, 1942, and another meeting sometime in April or May, 1943

Members having suggestions are invited to write to H. S. Criswell, Secretary-Treasurer, 14th & Pike Sts., c/o McClure Johnston Co., Pittsburgh.

Adam W. Tritsch, President

Association Activities . . .

Detroit

The Detroit Association of Warm Air Heating and Air Conditioning Contractors, Inc., with headquarters at the Fort Shelby Hotel, calls the attention of members to the Certificate of War Necessity for commercial motor vehicles after November 15. These will not be transferable and will specify:

1—Name and address of owner
2—Vehicles covered
3—Purposes for and conditions under which vehicle may be used
4—Such other terms and conditions as the Office of Defense Transportation may from time to time direct
5—No gas or tires may be bought for a noncertificated vehicle
6—Tires must be checked every 5000 miles or every 60 days, whichever occurs first
7—Prohibits use of vehicle after inspection unless inspection agency certifies that all reasonable repairs, replacements and adjustments necessary "To conserve and providently utilize" the vehicle's tires has been made
8—Each operator will be required to keep a weekly record of all operations.
9—Outside of that, you probably can do as you please till more orders are forthcoming

One hundred and fifty tons of idle steel inventory, that is sheets suitable for furnace work, has been located and diverted to this industry.

The penalty imposed upon a Florida concern—"All priority assistance and allocations withdrawn for a period of three months"—as a result of violations of WPB's copper conservation program is cited, and members are warned to follow carefully the rulings of WPB, OPA and ODT. The jobber is anxious to help dealers and to help himself by selling any goods which he can. If he tells you he can't sell you a few sheets out of that pile because they were obtained under PRP, believe him and don't get all wrought up.

The secretary (in company with a number of other trade group men) is doing all he can in following every move made by the Agencies to assure your continuation in this business under the best possible conditions considering that we are in the grand-daddy of all wars with the final outcome totally unpredictable at the present moment. If you have problems, bring them to the meeting or to any of your officers, and the association will help you if they can. If you have suggestions of a practical nature, do likewise. Special bulletins will be sent out if there is news sufficiently important.

The beer for last meeting was furnished by Honorary Life Member and Perpetual Board Member, John S. Clark. The beer for the October 8 meeting will be furnished by Eddie, alias Asbestos. Wilson of Duxalac Ave.

Marshall Van Assche, Secretary.

◆

Florida

More furnaces have been shipped to Florida during the past year than in any other period. Many of the large furnace manufacturers have made contacts with the best and largest of the sheet metal and heating contractors at the annual convention of this association. Florida has been the site of many large building projects which have used many carloads of furnaces, steel, roofing materials and insulation. Practically all of these materials have been installed by Florida Roofing and Sheet Metal Contractors. Thus, the volume of business lost due to cessation of private construction has been more than compensated for by Government building.

Most of the manufacturers and wholesalers have cooperated to get estimates to interested contractors so that the contractor will know what he may bid for installation of equipment required. The interest shown by these manufacturers at this time will greatly affect the attitude of the purchasing contractor when stable business conditions are again attained.

Although WPB has again cut the maximum value of new civilian building, there is no limit on the repair work which may be done. Reroofing work may continue and will serve to keep some shops going if and when Government building ceases. It is also probably that many sheet metal men and roofers will enter Government Service. The roofing business may proceed in a slow way during the war and be held together to resume new construction when possible.

Mr. Mahew of the American Rolling Mills Company visited in Florida, recently. He stated that Charlie Broome, Jr., had been ill for some time but was now getting to the office a few hours daily.

Frank Tack is now at the New Riverside Hotel at Gatlinsburg, Tennessee, in the Great Smoky Mountains recovering from a nervous breakdown. He expects to be home in Clearwater soon.

L. A. Burgess, Secretary.

◆

Wisconsin

The Sheet Metal Contractors Association of Wisconsin, Inc., has purchased for their entire state membership the weekly Bulletin of the Wisconsin Manufacturers' Association at quite an expense, believing that members should keep posted as to what is in the offing and what may confront them and be prepared to offer objection to any ill proposed legislation.

The association is also allied with the American Small Business Organization, 407 South Dearborn St., Chicago, a national organization representing many businesses throughout the nation. This latter organization has called a conference in Washington to meet with U. S. senators, representatives, Judiciary, WPB and WPA, to discuss with them as to legislation for the small business men's survival and will present a tentative draft of the "War Distress Business Loans Corporation Act."

Paul L. Biersach, Secretary.

◆

Milwaukee

The September meeting of the Milwaukee Sheet Metal Contractors Association, Inc., held at Parlor "A" Schroeder Hotel was called to order by President W. Marth who introduced representatives of the Philip Carey Company—Messrs. E. C. DeCamp & Johnson—who gave an illuminating and instructive talk on their wares, substitutes for metal during this emergency. Actual demonstrations as to the making up of elbows and pipe were interesting.

Chairman Stefanik of the Membership Committee proposed the Lang Sheet Metal Works, 224 S. Second St., as members, they were accepted and placed on the roster.

Price ceiling, unethical methods in business, Better Business Bureau and American Little Business Association activities, as well as stamp and bond sales to employees on the 10 per cent plan were considered and fully discussed.

Former member R. S. Schmeider, now of Milcor Company and located in Baltimore, gave a talk on existing conditions in his new territory.

Refreshments were served and good fellowship reigned for some time after the close of the meeting.

Paul L. Biersach, Secretary.

◆

Wentworth of Detroit Dies

E. C. Wentworth, a member and long-time president of the Detroit Association of Warm Air Heating and Air Conditioning Contractors, and a member of the firm of Wentworth & Conzelman, Detroit, Michigan, passed away recently.

1942 CONVENTIONS

Oct. 19-20—National Association of Sheet Metal Distributors. Semi-Annual. Palmer House, Chicago.

Dec. 8-9—National Warm Air Heating and Air Conditioning Association. Silver Anniversary. Hotel Cleveland, Cleveland, Ohio. George Boeddener, Managing Director.

New Products

For your convenience a number has been assigned each item. Circle the items in which you are interested on the coupon on page 80 and mail to us.

● Indicates product not listed in 1941 Directory.
△ Indicates manufacturer not listed in 1941 Directory.

△102—Jiggers Soldering Kit

Jiggers, Inc., 215 West Illinois St., Chicago, offers a complete soldering kit in a nutshell. Each Jigger is a small, self-contained soldering unit that contains just the correct amount of 50-50 solder and flux hermatically sealed within a waterproof heat-gen-

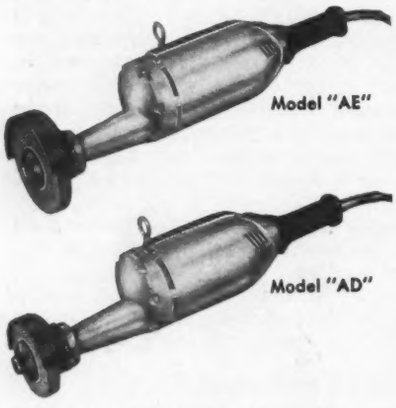
erating outer shell. To obtain a strong, perfectly soldered electrical connection, it is only necessary to push the wire splice into a Jigger and touch a lighted match to the Jigger. The Jigger shell ignites and produces the proper temperature to flow the solder into the splice. The burnt shell is then dropped off and a smooth, perfectly soldered splice is revealed.

Free samples are offered.

◆

103—Portable Grinders

Skilsaw, Inc., 5033 Elston Ave., Chicago, has added two new portable grinders—Models "AD" and "AE"—four and five-inch grinders. Both are especially engineered to meet today's high speed requirements on all grinding, wire brushing, polishing and buffing operations.

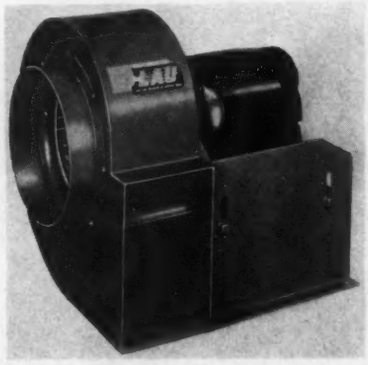


Ball bearings mounted in steel inserts on armature and extreme ends of wheel spindle absorb thrust, eliminate vibration and insure cool operation. Commutator and switch are fully enclosed for protection against dust, and straight-line ventilation blows dirt away from operator.

Finest steel gears, heat-treated for long life and spline-mounted on shafts, are both strong and quiet. Powerful universal motor assures full efficiency under load. Rubber sleeve handle provides a non-slip grip.

104—Single Inlet Blowers

The Lau Blower Company, 2001 Home Avenue, Dayton, Ohio, offers a new line of Lau single inlet blowers—direct and belt-driven, embracing



three series, a wide range of wheel diameters (clockwise or counter clockwise rotation), and eight angles of discharge.

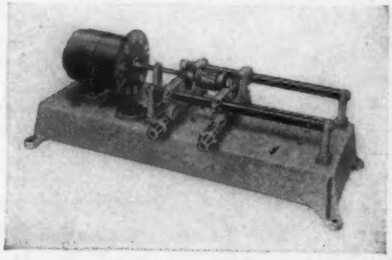
Performance data, dimensions, and other information is available.

◆

●105—Dy-Namic Balancers

Bear Manufacturing Co., Industrial Division, Rock Island, Illinois, offers the Bear bench model 335 for Dy-Namic balancing of small armatures, fans, gears, rotors, blowers, etc., weighing from 6 oz. to 20 lbs.

These Bear machines embody a new, extremely sensitive and accurate bal-



ancing principle to indicate the disturbing centrifugal or force couple with a high degree of accuracy. Both the angular position and the value or amount of unbalance is shown at the same time. The balancing machine reveals whether a static or Dy-Namic unbalance, or both, are present without reversing ends of the body being balanced.

Bear balancing machines are available in a variety of models ranging from bench models to large floor and pit-type models, weighing from 6 ounces to 1,000 pounds.

△106—Protected Metal

Cheney Metal Products Company, 33 Oxford St., Trenton, N. J., is offering Cheney Protected Metal — a new light gauge metal sheet in sizes 30x96 and 36x96 only.

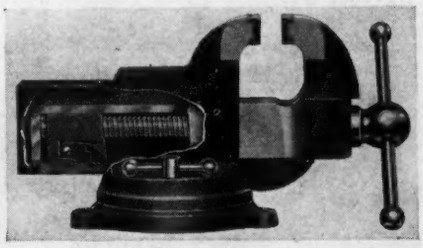
The sheet of steel is heated to a high temperature and combined with a compound of special pitches and natural slate so that the steel and the compound are thoroughly bonded together. The special pitches contain neither coal tars or asphalts, and the finished coating is a very elastic rubber-like material that will not run at 230 degrees F. or crack or peel at freezing temperatures.

The material is suitable for hot air ducts, ventilating ducts, flashings, gravel stops, valleys, metal roofs, termite shields, expansion joints, roof scuttles, downspouts and for all general sheet metal work.

◆

△107—Time-Saving Vise

Pacific Vise Company, 6331 Hollywood Blvd., Los Angeles, California, has recently introduced a new line of time-saving vises to speed up vital war work. The quick action principle involves the use of a patented nut and pawl which makes it possible to open and shut the vise like a drawer and



to lock it in any desired position with only two turns of the handle.

Pacific vises are of rugged construction. Castings are of semi-steel. All working parts are of steel, precision machined, fully enclosed and all parts are interchangeable. The buttress threaded screw is enclosed in a single casting and is firmly supported at three points to maintain correct allignment and to provide added gripping power without strain. A new type swivel base locking bar with two screws assures a positive lock in any position and equalizes strain.

Pacific vises are available in three sizes—4½, 6 and 7 in.—in both the swivel base type and the solid base type.

NEWS from the Scrap Front

TIPS FROM OTHER "WASTE WARDENS" THAT MAY HELP YOU DO A BETTER JOB OF "GETTING IN THE SCRAP"

WRECKS ASPHALT PLANT TO GET WAR SCRAP—Demolition of this 26-year-old asphalt plant by an eastern refining company is yielding over a thousand tons of precious scrap, enough to make the steel for 70 "General Lee" tanks . . . *Do you have any steel structures, idle now and of doubtful future value, which should be wrecked to release the scrap metal they contain?*

NO HOARDING HERE—A midwest novelty manufacturer (now engaged in war-work) recently turned in over two million pounds of metal parts, tools and machinery at scrap metal prices . . . *Are you holding idle stocks of obsolete and useless metal parts and equipment for some uncertain future need?* In most cases they're worth more now to your country as scrap than they'll ever be to you.

SEGREGATION MINIMIZES SCRAP LOSS— A western aircraft plant has more than doubled its scrap collections through a systematic salvage program, directed from a central office. All metal scrap is segregated into solids and machinings, and also by alloy content, right at the machines. Scrap containers are color-banded and labeled to clearly identify what goes into each . . . *Have you organized an efficient scrap collection system at your plant? Does it provide for careful segregation?*

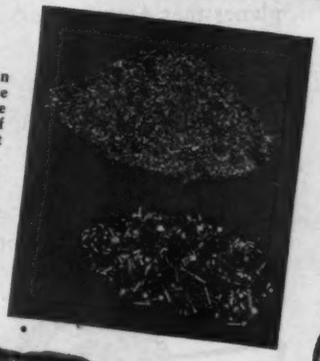
THE SCRAP IS COMING IN . . . BUT NOT FAST ENOUGH!

WE have proof that industry is co-operating in the drive for scrap metals . . . proof measured in thousands of tons. But mills must get *more* iron and steel scrap if they are to meet the gigantic needs of war industry.

Don't forget . . . steel gets to work on the battlefront more quickly when plenty of scrap is available. Scrap is already metallic; therefore, less ore needs to be converted into pig iron per ton of steel produced. By remelting scrap to make new steel, more tons of high-quality products can be turned out in a hurry for war purposes. So make it your personal war assignment to see that your organization does a thorough, continuous job of "getting in the scrap." Cooperate closely with your local Industrial Salvage Committee.

FLOOR SWEEPINGS ARE "PAY DIRT"

Every day sweepings at an eastern war plant yield more than 1000 pounds of usable small parts and a big pile of scrap metal. Janitors sift sweepings through wire mesh. Then magnetic separators and mechanical sorting devices finish the job. Usable parts then go back to stock, and scrap is shipped for salvage . . . *Are you gleaning every pound of metal from your floor sweepings?*



AMERICAN STEEL & WIRE COMPANY, *Cleveland, Chicago and New York* · CARNEGIE-ILLINOIS STEEL CORPORATION, *Pittsburgh and Chicago* · COLUMBIA STEEL COMPANY, *San Francisco* · NATIONAL TUBE COMPANY, *Pittsburgh* · TENNESSEE COAL, IRON & RAILROAD COMPANY, *Birmingham*

UNITED STATES STEEL

FOR VICTORY TODAY AND SOUND BUSINESS TOMORROW

Get This Flag Flying Now!

This War Savings Flag which flies today over companies, large and small, all across the land means *business.* It means, first, that 10% of the company's gross pay roll is being invested in War Bonds by the workers voluntarily.

It also means that the employees of all these companies are doing their part for Victory . . . by helping to buy the guns, tanks, and planes that America and her allies *must* have to win.

It means that billions of dollars are being diverted from "bidding" for the constantly shrinking stock of goods available, thus putting a brake on inflation. And it means that billions of dollars will be held in readiness for post-war readjustment.

Think what 10% of the national income, saved in War Bonds now, month after month, can buy when the war ends!

For Victory today . . . and prosperity *tomorrow,* keep the War Bond Pay-roll Savings Plan rolling in *your* firm. Get that flag flying now! Your State War Savings Staff Administrator will gladly explain how you may do so.

If your firm has not already installed the Payroll Savings Plan, *now is the time to do so.* For full details, plus samples of result-getting literature and promotional helps, write or wire: War Savings Staff, Section F, Treasury Department, 709 Twelfth Street NW., Washington, D. C.

EVERYBODY EVERY PAYDAY AT LEAST 10%

Save With

War Savings Bonds

This Space Is a Contribution to America's All-Out War Program by

AMERICAN ARTISAN

New Products . . . . . .

For your convenience in obtaining copies of new Literature use the coupon on page 80.

• 108—Remote Control

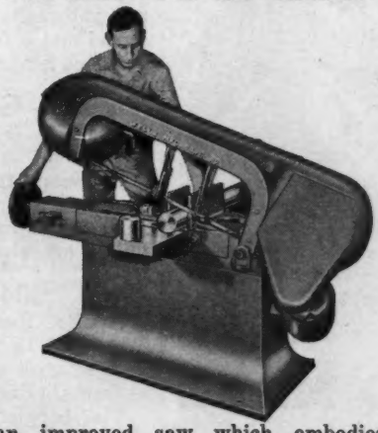
Hobart Brothers Co., Troy, Ohio, has developed a new remote control unit which is now a standard production feature of all welders offered. This control is protected from accidental breakage by a metal pull-out handle set over the control dial and by cushion springs on the back of the

porcelain rheostat. The new dial, it is believed, will increase weld qualities —especially welds made under modern high speed techniques. With remote control, 100 steps of fine volt-amperage adjustment are placed within reach of the operator's hand.

The remote control unit is easily set up by using an ordinary lamp cord.

• 109—Metal Cut-Off Saw

Wells Manufacturing Corporation, Three Rivers, Michigan, offers the Wells metal cut-off saw—series 80—



an improved saw which embodies worth-while improvements and features. Base or legs are optional. A large stock of blades is available.

◆

△ 110—Conversion Grates

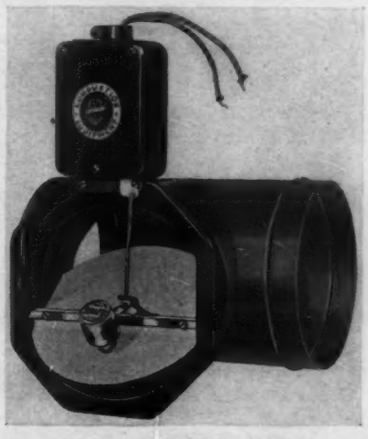
The D. L. & W. Coal Co., 120 Broadway, New York City, offers special grates for conversion from oil to anthracite. Blue Coal conversion grates are complete with grate bars, supports, and shaking device.

There is a square grate assembly available for any rectangular heater with a firepot between 12 and 50 inches long and between 12½ and 25½ inches wide. Round grates are available for round furnaces.

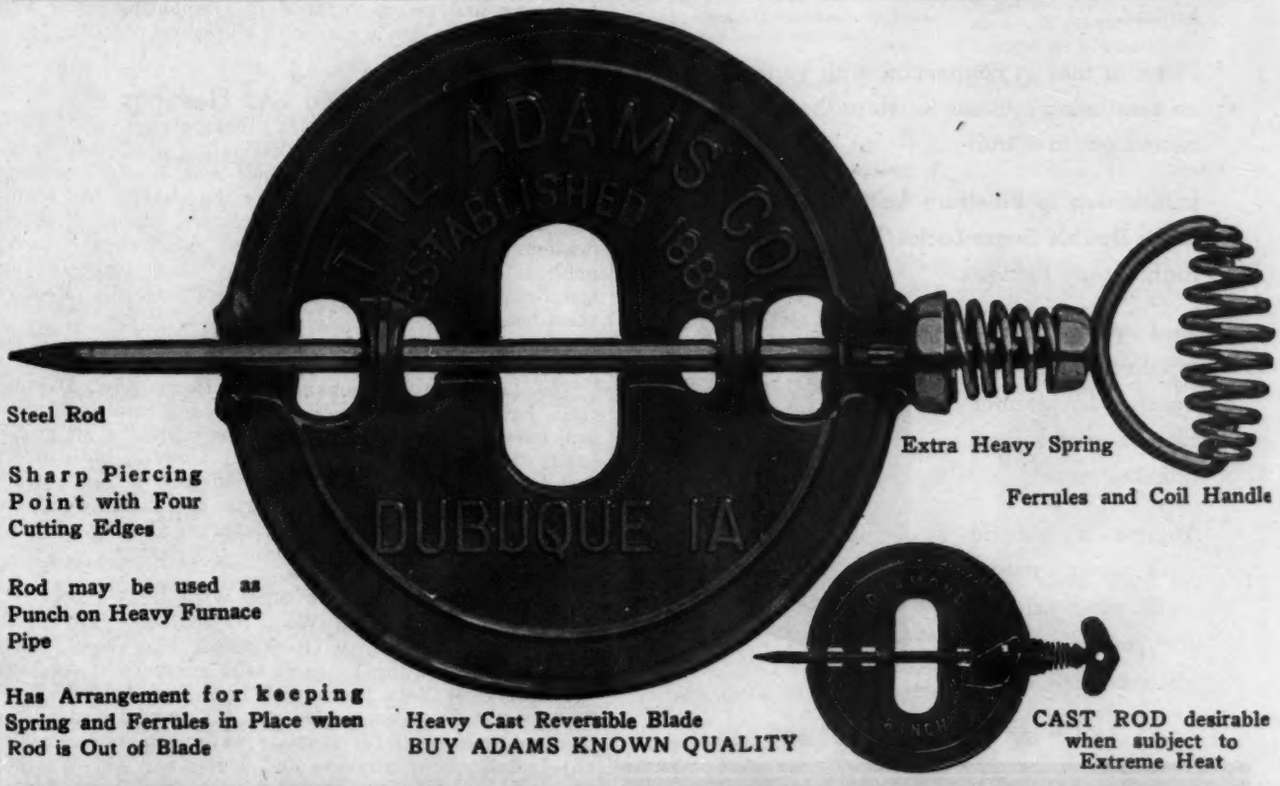
◆

111—Draft-O-Stat

The Hotstream Heater Co., 8007 Grand Ave., Cleveland, Ohio, has engineered a new line of Draft-O-Stats, Model B and BM.



The BM motorized Draft-O-Stat can reduce fuel oil consumption as much as 25 per cent by increasing the cut-out period. If conversion from oil to coal is required, no additional wiring or equipment is required.


THE ADAMS CO
ESTABLISHED 1883
DUBUQUE IA
Steel Rod
Sharp Piercing Point with Four Cutting Edges
Rod may be used as Punch on Heavy Furnace Pipe
Has Arrangement for keeping Spring and Ferrules in Place when Rod is Out of Blade
Heavy Cast Reversible Blade
BUY ADAMS KNOWN QUALITY
Extra Heavy Spring
Ferrules and Coil Handle
CAST ROD desirable when subject to Extreme Heat

DIAMOND SMOKE PIPE DAMPER

Manufactured by THE ADAMS COMPANY Dubuque, Iowa, U.S.A.

ESTABLISHED 1883

FOR VICTORY TODAY
AND SOUND BUSINESS TOMORROW

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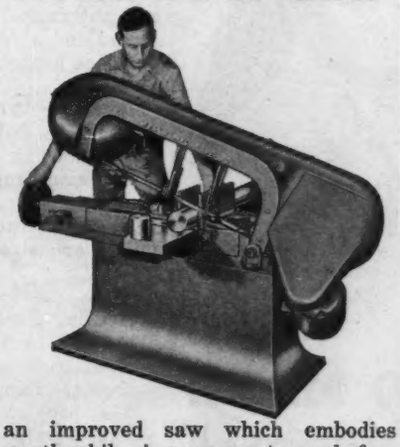

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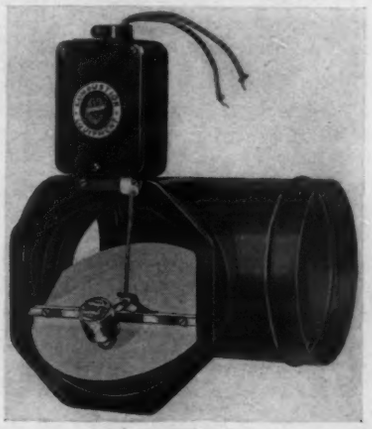

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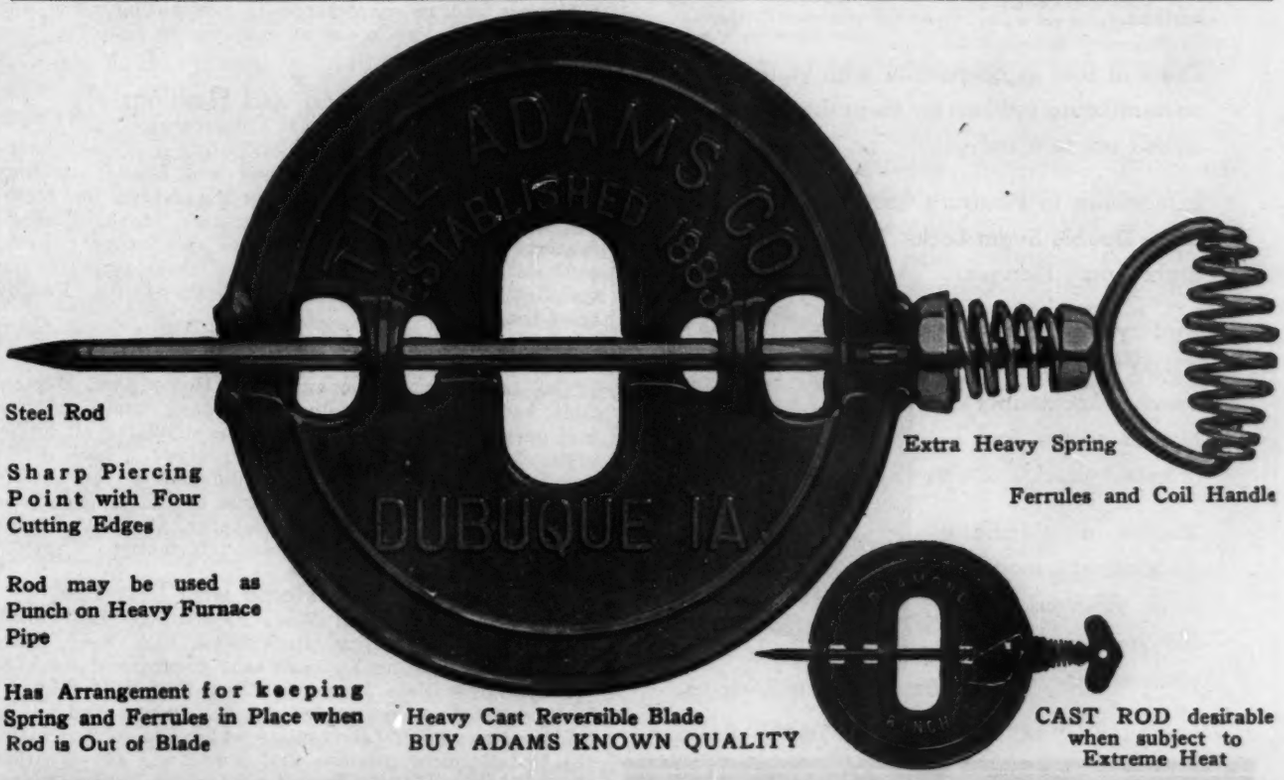

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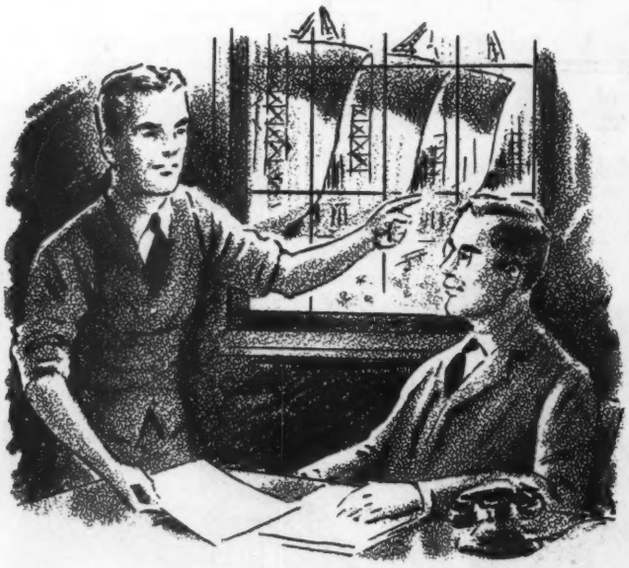
Manufactured by THE ADAMS COMPANY Dubuque, Iowa, U.S.A.
ESTABLISHED 1883



. . . . HOW TO MAKE VENTILATING SYSTEMS *for* SHIPS *in a Hurry!*

One man and a Lockformer can make more Pittsburg locks than 16 men working at 8 brakes.

Think of that in connection with your work on ventilating systems for ships that must be turned out in a hurry!

In addition to Pittsburg Locks, Lockformers make Double Seam Locks, Drive Cleats and Right Angle Flanges.

And your newest apprentice can operate Lockformer like an expert—in 5 minutes' time!

There's a specific Lockformer model —at your price— for your particular shop needs.

Write or Wire for Catalogue.

The LOCKFORMER Co.
4617 ARTHINGTON STREET, CHICAGO, ILLINOIS

New Literature . . . .

For your convenience in obtaining copies of new Literature use the coupon on page 80.

302—Self-Stoker Furnace

Viking Manufacturing Corp., 1234 Ray St., Dayton, Ohio, is distributing a 4-page folder illustrating and describing the new Viking Self-Stoker for coal (bituminous and anthracite) or coke with price list. There is a gravity model and a forced air model self-stoker furnace, as well as space heaters.

◆

303—Grates Convert from Oil to Coal

The D. L. & W. Coal Co., 120 Broadway, New York City, is distributing Bulletin L 40 entitled "Special Grates for Conversion from Oil to Anthracite," 16-pages and cover illustrating and describing their conversion grates and giving illustrated instructions for installing. Tools required are also listed.

◆

304—Saran Synthetic Products

Acadia Synthetic Products Division, Western Felt Works, 4115 Ogden Avenue, Chicago, has published a booklet with complete price lists on Saran thermoplastic —sheets, tubing and fittings.

The booklet contains information on the handling of Saran, its physical, chemical and electrical properties. It is a ready reference on the various forms in which Saran is now available.

◆

305—Balancing Principles

Bear Manufacturing Co., Industrial Division, Rock Island, Illinois, has published a new balancing booklet. In addition to descriptions of the Bear Dy-Namic balancing machines available for balancing armatures, fans, wheels, gears, etc., the booklet contains concise data on Dy-Namic balancing and its importance in eliminating noise and premature wear due to excessive vibrations resulting from Couple action.

◆

306—Roofing and Flashings

Revere Copper and Brass Incorporated, 230 Park Avenue, New York City, is distributing a 32-page booklet, covering their Rocan Copper and Roofloy roofings with technical data and construction details for seaming, forming, flashing details, gutters, standard specifications for Rocan or commercial sheet copper work, methods of applying and handling, short form roofing specifications, and general specifications for Roofloy sheet-lead work.

◆

307—New Line of Single Inlet Blowers

The Lau Blower Company, 2001 Home Ave., Dayton, Ohio, has issued a complete, new 12-page catalog on general purpose Single Inlet Blowers for supplying air or for exhausting purposes. This line of blowers, both direct and belt driven, embraces three different series, a wide range of wheel diameters (clockwise or counter clockwise rotation), and eight angles of discharge. Catalog contains performance data, dimensions, and information.

◆

308—Heat Your Home with Less Fuel

The National Mineral Wool Association, 1270 Sixth Avenue, New York City (Rock Wool, Slag Wool, Glass Wool) is distributing an important government message "How to Heat Your Home with Less Fuel This Winter." The four steps recommended are (1) Inspect and adjust heating equipment; (2) Insulate walls, and roof or attic; (3) Install storm windows and doors; and (4) Weather strip and seal air leaks around windows and doors. America faces a serious fuel problem, and this booklet has been prepared jointly by the Office of Petroleum Coordinator, War Production Board, Office of Price Administration, Bituminous Coal Consumers' Counsel, Office of Solid Fuels Coordinator, and Office of War Information. These booklets are available at $7 per thousand.

New Literature . . . .

For your convenience in obtaining copies of new Literature use the coupon on page 80.

309—War on Fuel Waste

The War Service Committee of the American Society of Heating and Ventilating Engineers, 51 Madison Ave., New York City, has compiled information to assist the home owner in fuel conservation methods. The procedure of converting oil burner heating plants to coal, and the proper methods of firing coal and other fuels in heating equipment are outlined in the pamphlet "War on Fuel Waste—How to Do It."

Reprints for distribution can be supplied for $8.00 per 1,000. Single copies will be sent upon request when accompanied by a self-addressed return envelope, or five cents in stamps to cover addressing and mailing.

"The desire of all Americans to cooperate in conserving fuel as a war measure is recognized by the Committee," says Dr. B. M. Woods, chairman, "and it is hoped that this pamphlet will serve as a useful guide in amplifying the ways in which the TEN WAYS TO SAVE FUEL can be achieved."

Four things that can be done by the home owner without cost: (a) avoid overheating by proper firing and correct thermostat adjustment; (b) maintain lower temperatures; (c) do not heat unusued rooms; and (d) improve radiator efficiency by cleaning surfaces, removing drapes and other obstructions to air circulation.

◆

Motor Installation, Care and Adjustment—Century Electric Company, 1806 Pine Street, Saint Louis, Missouri, has prepared and distributed to the trade seven bulletins in an effort to help both those who can not buy motors and those who are working on high priority jobs. They are written to cover installation and care to help the user and insure getting the longest service possible. A system of suggested checks are offered to eliminate first one thing and then another to assist in locating trouble when something goes wrong or the motor or generator does not operate. This will help the individual motor user or service man and make him independent of the manufacturer. Write for these manuals. Coupon No. 310.

◆

Tips on Fuel Conservation—General Electric Co., Air Conditioning and Commercial Refrigeration Department, 5 Lawrence St., Bloomfield, N. J. offers a new consumer booklet entitled "Tips on Fuel Conservation" written for all householders regardless of type of heating equipment.

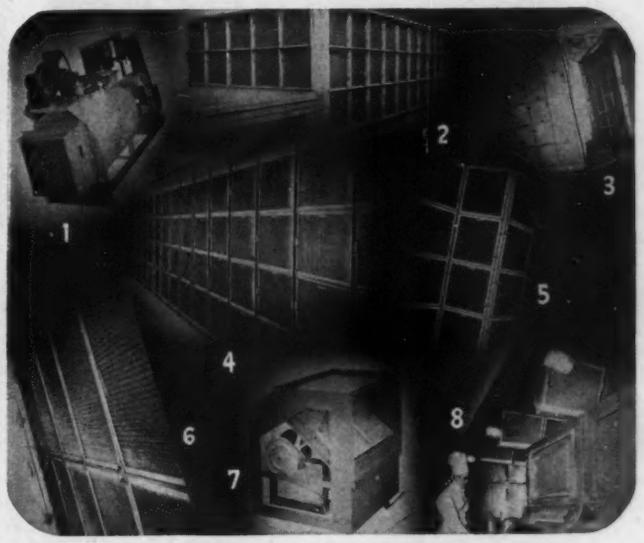
The fuel-saving facts are presented in three sections. The first concerns heat loss generally, covering weather stripping, storm sash, insulation, and other means of reducing heat loss. The second section deals with heating equipment and heating systems. Suggestions are offered for saving fuel in hand-fired and automatic coal-burning heating plants, in gas-fired and oil-fired automatic heating plants as well as in the steam, vapor, hot water or warm air heat distributing systems they serve. The third section deals with service calls and suggestions on how to avoid unnecessary calls. In this section, the importance of annual inspection and adjustment by a competent service man is heavily stressed.

An additional section at the end of the book acquaints owners of General Electric automatic oil heating equipment with the functions and features of their units. The booklet has 40 pages, is tabbed and indexed for easy reference, and is printed in blue and red. Copies are now being distributed by General Electric distributors and dealers. Coupon No. 311.

◆

Castable Refractory.—Fireline Stove & Furnace Lining Co., 1800 Kingsbury St., Chicago, has prepared a 4-page envelope stuffer with space for dealer imprint with full directions for installation of their Fire Hearth Castable Refractory for stokers and oil burners. Coupon No. 312.

AIR-MAZE
PERMANENT PANELS
For Every Air Filter Application
Industrial • Commercial • Institutional



1. Well known industrial unit heater is AIR-MAZE equipped.
2. Typical AIR-MAZE installation in Detroit industrial plant.
3. AIR-MAZE installation in mid-western department store.
4. Large Cleveland bank building uses AIR-MAZE Air Filters.
5. Famous air conditioned Toledo cafeteria is AIR-MAZE equipped.
6. AIR-MAZE installation in one of New York's largest hotels.
7. Cut-away view of modern blower unit with AIR-MAZE filters.
8. AIR-MAZE Greastop filter installation in kitchen canopy of Detroit restaurant.

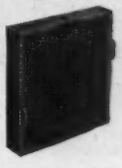
★ ★ ★

● The result of nearly twenty years of specialized engineering experience, AIR-MAZE Permanent Air Filter Panels embody every characteristic essential to the successful solution of air filtering problems in every field—industrial, commercial, institutional, and residential. Their long-range economy, high efficiency, large dust holding capacity, low pressure drop, and ease of cleaning have all been proved by scientific test as well as actual use. In the wide range of more than 3,000 types and sizes, there is an AIR-MAZE Filter Panel for every application to meet your particular requirements. Write for details.

TWO OF THE MANY AVAILABLE AIR-MAZE FILTER PANELS

AIR-MAZE "A" PANEL A heavy duty type air filter of multiple graduated density for protecting Engines, Compressors, Blowers and Severe Service Air Conditioning Systems.

AIR-MAZE "KLEENFLO" PANEL



Provides the economical solution for lighter service air conditioning systems. Unit Air Conditioners, Room Coolers, Furnace Blower Cabinets and Window Ventilators.

AIR-MAZE CORPORATION
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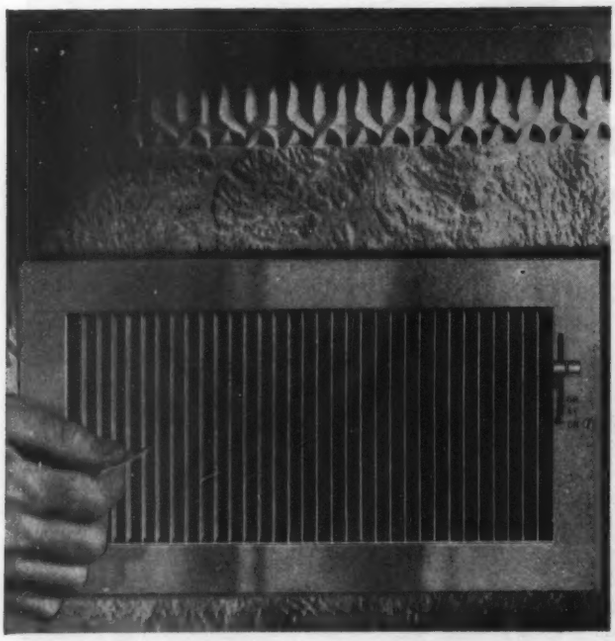
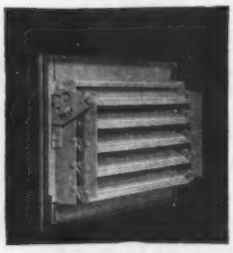
AIR-MAZE
DEPENDABLE AIR FILTERS FOR EVERY APPLICATION



H&C No. 88 DESIGN

Ace of Multi-Shutter

DOUBLE DEFLECTION REGISTERS

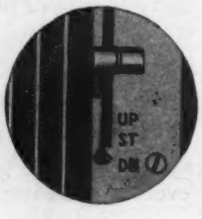


Shallow valve depth (1-11/16" from wall to extreme edge) is particularly advantageous in shallow ducts.

EASIER TO ADJUST — Bars are connected with each other in sections of approximately 2½". By turning one bar to the angle desired all bars in the section are turned to the same angle and firmly held in position. Time and labor in obtaining deflection desired, therefore, are considerably less than with the flexible fin type face, and bar settings are more uniform.

SHUTTERS LOCK IN POSITION FOR UPWARD or DOWNWARD DEFLECTION DESIRED

Tightening screw beneath the valve handle locks the shutters into position. When fully closed the shutters interlock, preventing air leakage and noise.



MADE IN SIZES UP TO 48"x40" and therefore ideal for large commercial and institutional installations as well as war housing and other home installations.

H&C is streamlined for furnishing war housing registers of all types. It will pay you to consult us on your next project.

HART & COOLEY MANUFACTURING CO.

Warm Air Registers - Air Conditioning Grilles - Damper Regulator Sets - Dampers - Chain - Pulleys

HOLLAND H&C MICHIGAN

Philadelphia Office: 1600 Arch Street

Western Representatives: Godfrey Ruger Co., Los Angeles, San Francisco, Portland, Seattle, Salt Lake City, Denver

New Literature . . . .

For your convenience in obtaining copies of new Literature use the coupon on this page.

313—Rivet Squeezer

Whitney Metal Tool Co., 99 Forbes St., Rockford, Illinois, is distributing a circular covering their Whitney-Jensen Redi-Set rivet squeezer with interchangeable dies. Over 25 sizes of rivet squeezers, as well as a blind rivet puller are manufactured.

◆

314—Sturdybender Catalog

The Cyril Bath Company, East 70th and Machinery Ave., Cleveland, who are manufacturers of the Sturdybender bending presses, and a large line of special metal forming machinery, and are also national distributors for the Steelweld heavy presses and bulldozers, has published a new 36-page die and tool catalog.

◆

315—Construction Industry Postwar Planning

The Producers' Council, Inc., 815 Fifteenth St., N. W., Washington, D. C., has available a 28-page booklet entitled "Postwar Planning for the Construction Industry"—a statement of the need, objectives and procedures of a program to prepare the construction industry to do its part in maintaining full employment in the Post-War Period. Single copies are available on request.

◆

316—Handbook of Special Steels

Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh, offers a revised edition of "Handbook of Special Steels," which incorporates all pertinent information on the various grades of stainless, tool, and other special alloy steels.

The Handbook, particularly adapted for use by design engineers and production men, includes complete data for guidance in the proper selection, treatment, and use of these alloy steels, with finder charts and plenty of tables to facilitate quick reference.

Tool steels are discussed with suggestions for selecting the proper grades. There is appended a table setting forth recommended types for particular applications, and information on Drill Rod with a list showing sizes, weights and prices.

Under a heading "Special Products" the Handbook deals with Shoe Die Steel, Silcrome Valve Steels and Special Shapes.

There is also contained in the book detailed information, engineering tables and other data on Nitralloy Steels, Stainless Steels, with a discussion of the Pluramelt technique, Electrical Steels and Carbon Steels.

A large section of the book is given over to charts dealing with steel weights, and with sizes of flats and numerous other shapes.

FOR YOUR CONVENIENCE

American Artisan, 6 N. Michigan Ave.
Chicago, Ill.

Please ask the manufacturer to send me more information about the equipment mentioned under the following reference numbers in "New Products" and "New Literature." (Circle numbers in which you are interested):

102	103	104	105	106	107	108	109
110	111						
302	303	304	305	306	307	308	309
310	311	312	313	314	315	316	

Name .....

Company .....

Address .....

Are you Manufacturer——Jobber——Dealer——

With the Manufacturers . .

Glessner of Excelsior Dies

Arthur W. Glessner, president of the Excelsior Steel Furnace Company, 118 S. Clinton St., Chicago, died September 10, following a heart attack while walking near the company office. Mr. Glessner was 81 years old and for the last 46 years had been editor of the Galena (Illinois) Gazette. He founded the Excelsior Steel Furnace Company sixty-two years ago. He is survived by his wife, Mrs. Abbie Brown Glessner and two sons—A. B. and Herbert C. Glessner.

◆

P. D. Block, Jr., Succeeds Father

At a special meeting of the Board of Directors of the Inland Steel Company held at the offices of the company on September 14, 1942, P. D. Block, Jr., was elected to the Board to succeed his father, the late P. D. Block.

P. D. Block, Jr., is Assistant to the Vice President in Charge of Raw Materials and the Inland line of ore freighters. He came to the company in 1928 after graduation from Yale University where he majored in Industrial Engineering. Mr. Block spent a number of years at the Inland ore mines and in practically every department of the mills at Indiana Harbor, Indiana, before coming to the Inland Executive Offices at 38 South Dearborn Street, Chicago.

Russell L. Peters, formerly Executive Secretary of the Illinois Public Aid Commission, was appointed Assistan; Treasurer of the Company.

◆

Research Products Corporation Meeting

Research Products Corporation, 1015 E. Washington Ave., Madison, Wisconsin, gave a party Thursday evening, August 27th, to the Warm Air Heating industry in the auditorium of the Engineering Society of Detroit—the new Horace Rackham Memorial Building.

This meeting was for the purpose of informal y discussing "How the Warm Air Furnace Dealer May Cooperate with the Government Fuel Conservation Program." About 140 guests attended this meeting and many of the warm air heating contractors voiced the opinion that the industry as a whole should do their part in letting the owners of forced warm air furnaces know their filters must be changed frequently in order to get satisfactory heating conditions and that dirty filters means inefficiency in the heating plant as well as tremendous fuel costs.

Among the speakers during the evening was Harvey M. Merker, president of the Engineering Society of Detroit; M. B. Shea, president of the Michigan Chapter of the American Society of Heating & Ventilating Engineers; H. O. Nelson, president of Heating & Plumbing Industries Bureau; Dewey Cain, vice-president of the Detroit Association Warm Air Heating Contractors; Kemper Slidell, Pat Norris and Nelson Ross of the Research Products Corporation, Madison, Wisconsin.

Officers of the Detroit Contractors Warm Air Heating Association, and officers of the Michigan Chapter of the A.S.H.&V.E. and members of the press were presented to the group. A telegram from George Boeddener, secretary of the National Warm Air Heating & Air Conditioning Association, was read congratulating the company on taking the initiative in joining forces with the Government and the A.S.H.&V.E. who, likewise, have sponsored meetings in various parts of the country in the fuel conservation campaign.

William G. Boales presided as chairman of this meeting, and after questions from the floor answered by Nelson Ross, the meeting adjourned for a buffet supper in the banquet room of the Engineering Society of Detroit.

ORIGINAL WISE REPAIR PARTS

★ Furnace repairs are now at their peak . . . time is a most important factor . . . you and your men will save hours of time on every furnace repair job by using original Wise Furnace Repair Parts for Wise Furnaces. Supplied directly from the manufacturer. . . . They fit perfectly, install easily and operate most efficiently.

There is a large stock of various types of Wise Repair Parts on hand . . . ready for shipment . . . avoid delays in delivery time too. Order your repair parts from Wise . . . they assure customer satisfaction.

Regardless of lines carried, we invite your inquiries for Wise repairs.

DON'T FORGET THE . . . .
WISE SERIES "A" FURNACE

If a furnace is beyond repair and must be replaced by a new one . . . don't forget The Wise Series "A." Excellent construction with one-piece ashpit and lower front to eliminate joints, one-piece cellular firepot and self-cleaning radiator assure comfortable, economical heat for many winters to come.

THE WISE FURNACE COMPANY
AKRON OHIO

On Our Industry's Front

(*Continued from page 27*)

plan of tax payments such as the Ruml Plan. This subcommittee has been asked to report back on both proposals by December 1.

Indications are that the bill may be reported sooner if draftsmen can complete their work. It appears that the only major question left to be decided is repeal or modification of provisions for renegotiation of war contracts.

The committee has before it proposals to substitute flat limitations on war profits after taxes—5 per cent on general contracts and 1 per cent where the government provides the capital and facilities—and amendments suggested by the War and Navy departments and the Maritime Commission.

◆

Copper Recovery Progress

INVENTORY and Requisitioning Branch of War Production Board announces that 29,700,000 pounds of copper and copper base alloys have been allocated from immobilized stocks to war production channels through the WPB's copper recovery program, instituted eight weeks ago.

Of this total 2,400,000 pounds were allocated for stockpiling to meet future anticipated demands for standard shapes and sizes of mill products; 6,300,000 pounds were reported and allocated as scrap; 9,300,000 pounds were allocated, or known to have been moved for use in existing form under Priorities Regulation No. 13, and 11,700,000 pounds were allocated to brass mills and ingot makers for remelting.

To date over 14,000 firms have reported a total of 111,000,000 pounds of idle and excess inventories of copper and copper base alloys. Much of the copper reported has been offered for voluntary sale at the government's prices. That which the owner refuses to sell but which is nevertheless needed for war production will be requisitioned.

Copper and copper base alloys are now being allocated from idle inventories into strategic war production at the rate of over 4,000,000 pounds a week.

A special unit from the Copper Branch of WPB has been set up in the offices of Copper Recovery Corporation, 200 Madison Avenue, New York, N. Y., to locate copper in the forms needed, and to re-distribute it to war plants. At the present time, emergency requests for copper in various forms are being received from war plants and the armed services at the rate of 500,000 pounds a day. More than half of all these emergency requests are being successfully filled from idle and excess inventories where the materials are located in exactly the form needed, sales arranged and immediate shipments made.

SERIES No. 3

NIAGARA

POWER SQUARING

SHEARS

Series No. 3 Niagara Shears operate at 80 strokes per minute. High production squaring and trimming are assured by the instant-acting sleeve clutch, quick, accurate gaging and convenient operation.

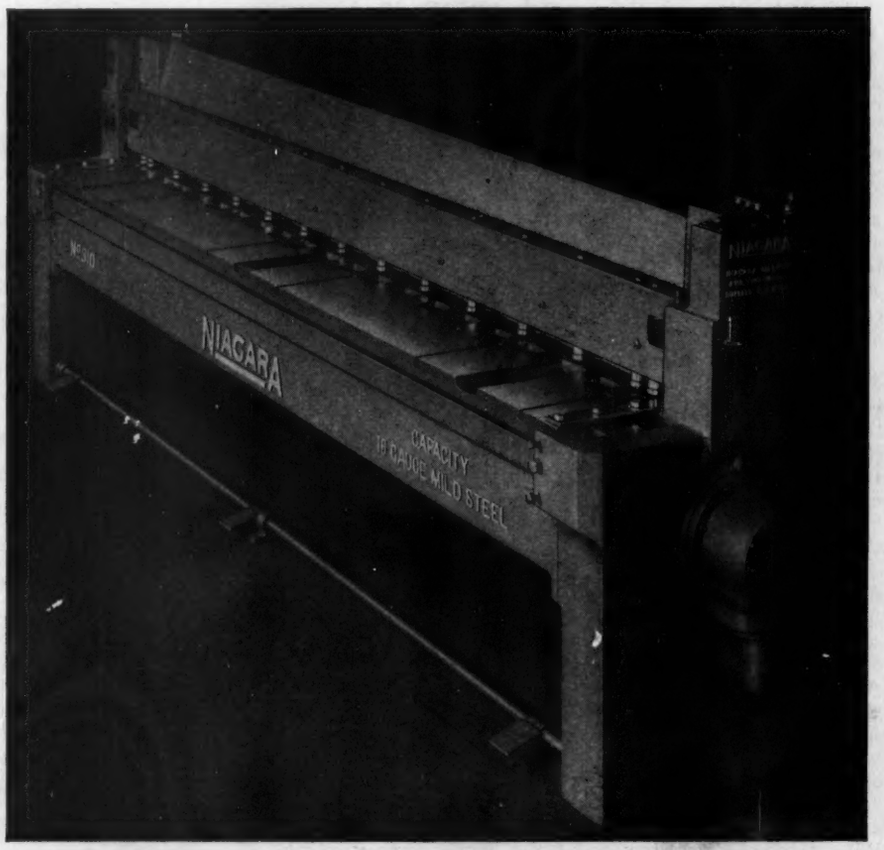
They cut sheared edges and narrow strips straight to within a very few thousandths of an inch.

Motor is direct connected and drive is enclosed in oil tight case.

Standard equipment includes ball-bearing, self-measuring parallel back gage, front and side gages, and four edge, solid tool steel knives.

* * *

Niagara Machine & Tool Works, Buffalo, N. Y., Cleveland, Detroit. New York.



Capacities: 14 to 18 Gage. Cutting Lengths: 4 to 12 Feet

Duct Temperature Losses

(*Continued from page* 52)

These losses are plotted in Fig. 5 so that the duct temperature loss may be selected for other duct sizes within the range of zero to 3,000 c.f.m. It is at once apparent that these curves must apply to rectangular ductwork where the ratio of width to depth is between 1.5 : 1 and 3 : 1. Within these limits the discrepancy will be small.

Conclusions

The recommended allowances for duct temperature losses of "from ¼ to ½ deg. per foot of duct" applies to ductwork carrying between 500 and 1800 c.f.m. and where the duct sizes will range from approximately 8 x 13 to 10 x 30 on the 0.1″ friction line. Referring to the curves for duct temperature losses, it is evident that for small branches of approximately 3 x 10 section, the duct temperature loss will amount to as much as 1½ deg. per foot for the galvanized iron duct and ⅘ of a degree per foot when this duct is insulated with 2-ply corrugated asbestos. The test figures for galvanized iron ducts show that in a duct 80 feet long where the stoker fire is building up the furnace temperature as rapidly as possible, even after 45 minutes of operation, the temperature at the end of the duct is only within four degrees of its normal value under steady operating conditions. With intermittent heating, it is evident that this condition would provide insufficient heat to the zone located at the end of the duct if the register temperature and c.f.m had been selected on the basis of normal duct temperature losses.

Under these circumstances some allowance should be made to introduce slightly more air to compensate for this shortage. With large installations, such as churches or schools, it would be advisable for the estimator to apply the thermal transmission co-efficients to the formula and calculate the exact temperature drop. He should then re-figure the necessary air delivery, making allowance for the time lag and the type of firing device which is to be used.

For residential work, the author suggests that the estimator could use the curves in Fig. 5 to determine the duct temperature loss through the entire system on a basis of 140 degrees air temperature. Obviously this would provide duct temperature losses slightly too large for those sections of the duct towards the end of the heating system, because the duct temperature would not be as high as 140 degrees in this zone. The advantage, however, would be that if the duct temperature losses are estimated slightly too high, the estimator will automatically be providing more c.f.m. to this zone and will compensate for the time lag due to intermittent heating.

Acknowledgment

The author wishes to acknowledge the assistance given during these investigations by Messrs. J. F. Mitchell and A. G. Reed.

ELECTRIC TOOLS
Are Hard to Replace

AVOID OVERLOADING
—REDUCE REPAIR COSTS
—GET LONGER SERVICE

Stanley Unishears are designed and built to last a long time. You'll get this long service, and save money on repairs, if you follow the simple instructions for maintenance packed with the tool. We'll gladly send new instructions if you need them.

If parts wear out, don't discard the tool. Have it repaired or rebuilt. Stanley is maintaining repair service during this emergency, either at our factory or service stations. Stanley Electric Tool Division, The Stanley Works, New Britain, Connecticut.

DON'T OVERLOAD

Use a Unishear of the proper capacity for the material to be cut. Have blades in operation before contacting work.

KEEP BLADES SHARP

Dull blades overload a Unishear. Keep blades sharp at all times. They'll cut better and cleaner when sharp. A little time out for sharpening saves a lot of time and trouble on the job.

LUBRICATE REGULARLY

Lubricate regularly according to instructions with each Unishear. Be sure to use correct type of lubricant.

CLEAN FREQUENTLY

Keep Unishears clean at all times and all bolts, screws, nuts tight. Let us know when we can help you.

TRADE STANLEY MARK

KEEP 'EM ON THE JOB WITH PROPER CARE

STANLEY UNISHEARS
THE ELECTRICALLY DRIVEN HAND SHEARS

Keep Your Welders Welding

(*Continued from page* 65)

Make sure that each brush surface, in contact with the commutator, has the polished finish that indicates good contact, and that the polish covers all of the surface of the brush. When replacing a brush be sure to put it in the same brush holder and in its original position. It has been found helpful to scratch a mark on one side of the brush when removing it, so that it will be replaced properly.

When installing new brushes, fit them carefully to the commutator. Sand only until the curve of the brushes is the same as that of the commutator. Be sure that the brush shunts (pigtails) are fastened securely so that current will not overheat the brushes and brush holders.

Check the springs that hold the brushes against the commutator. Improper spring pressure may lead to commutator wear and excessive sparking. Excessive heating may have annealed the springs, in which case they should be replaced and the cause of heating corrected.

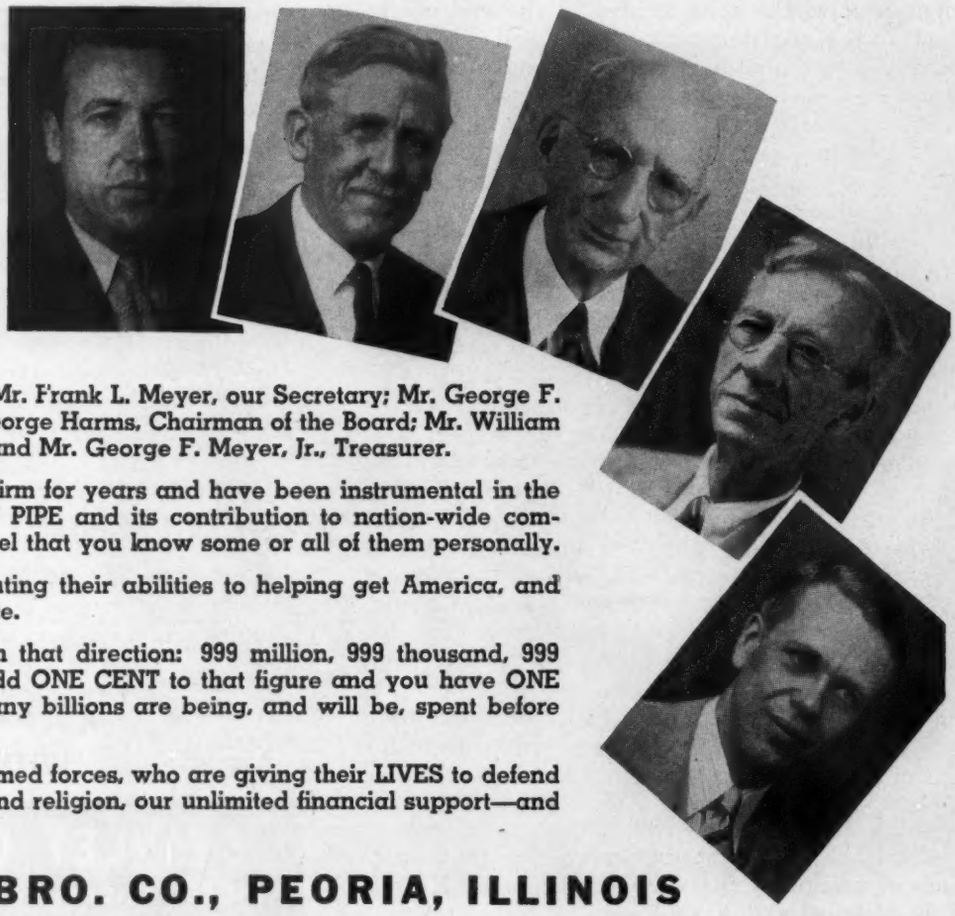
Inspect the commutator for color and condition. It should be clean, smooth, and glossy, with a color varying from straw to chocolate brown where the brushes ride on it. A bluish or reddish color indicates overheating of the commutator. Roughness of the commutator should be removed by sandpapering or stoning. Never use emery cloth or an emery stone. Use a "fine" stone or number 00 sandpaper unless the commutator is in bad condition, when the job may be started with a "coarse" stone and finished with "fine."

For this operation, press the stone or sandpaper against the commutator with moderate pressure with the motor running, and move it back and forth across the commutator surface. Use care not to come in contact with live parts. Be sure to keep the dust out of the machine.

If the commutator is very rough as evidenced by pronounced up and down vibration of the brushes, the armature should be taken out and the commutator turned down in a lathe. When this is done, it is usually necessary also to cut back the insulation between the commutator bars slightly. If the commutator is found to be dirty when the generator is inspected, it should be wiped clean with a piece of canvas or other cloth that is free from lint.

Never put oil on the commutator. Proper selection of brushes gives the commutator all the lubrication required to prevent excessive wear and to build up a good smooth operating glazed surface on the copper. The addition of oil results in the development of a high resistance film which may cause undue heating and rough brush action. The oil will also have a detrimental effect on the internal parts of the commutator.

Here Is Handy Pipe's "Official Family"



"From left to right" are Mr. Frank L. Meyer, our Secretary; Mr. George F. Meyer, President; Mr. George Harms, Chairman of the Board; Mr. William E. Look, Vice President and Mr. George F. Meyer, Jr., Treasurer.

All have been with the firm for years and have been instrumental in the development of HANDY PIPE and its contribution to nation-wide comfort, and many of you feel that you know some or all of them personally.

Today they are contributing their abilities to helping get America, and the World, back to peace.

And here's a thought in that direction: 999 million, 999 thousand, 999 dollars and 99 cents—add ONE CENT to that figure and you have ONE BILLION DOLLARS. Many billions are being, and will be, spent before we win this war!

We—YOU!—owe our armed forces, who are giving their LIVES to defend our freedom of speech and religion, our unlimited financial support—and much—MUCH!—more.

F. MEYER & BRO. CO., PEORIA, ILLINOIS

Refinishing Tarnished Stainless

(*Continued from page 66*)

posits, and with the aid of a few differing methods of application, restores metal to its original finish. It not only will clean flat or extruded sections, but is extensively used in the cleaning of metal plaques and relief work because it does not leave any residue in the crevices. After the surface is cleaned, a protective film remains which materially retards discoloration over a period of time.

Directions

A. Before using NuSteel make certain the cloth to be used has not been used with any other cleaner or polish.

B. Use a soft washed cloth, preferably of flannel texture. Wipe lightly over surface of NuSteel. Do not use too freely. A thin film handles easiest and the coverage is greater.

Rub surface briskly until dark film appears indicating that surface film has been dissolved and the metal is clean. Do not rub in circles. If metal has satin finish scratch lines, rub parallel with these lines. Wipe off residue and polish with soft clean cloth.

NuSteel Dusting Powder is an aid in speeding this finishing or polishing operation.

After scouring any metal surface there is an accumulation of residue which in some instances requires considerable polishing to remove. Sprinkle a light film of Dusting Powder on the surface before polishing. The accumulated residue is easily removed because of the absorbent properties of the Powder. After the polishing cloth has become soiled, shake. Most of this residue will free itself with the powder, leaving the cloth relatively clean for further powder and rubbing.

With the addition of Monel or Nickel Wool Pads, many manual operations in cleaning and fabrication are now made easier. These are the removal of stubborn accumulations and heat tints due to exposure to heat and heat tints from welding. In many cases, NuSteel used with these wools will remove cross scratch lines by rubbing in the direction of the original finish lines, provided the cross scratches are not cut too deep.
Directions:

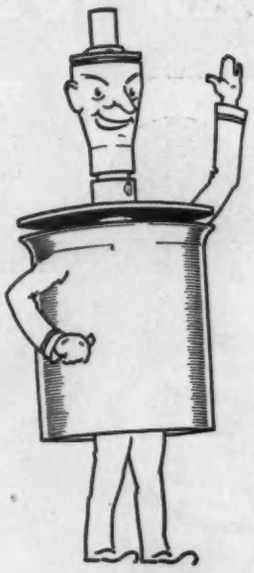
Substitute Monel or Nickel Wool Pads for cloth, following directions above. (Rub in same direction as finish lines are never in circular motion.)

Power Application

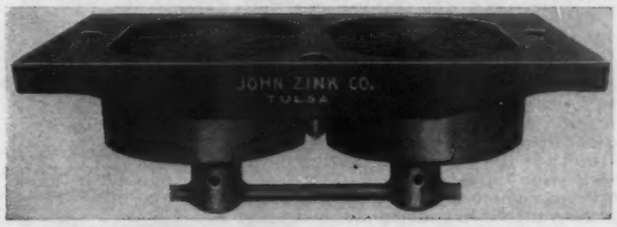
Laboratory tests and production experience establish excellent results using slow speeds (approx. 1200-1500 F. P. M.). These slow speeds are essential for best results and also eliminate the many disadvantages working with high speed tools.

Special tampico wheel brushes have been de-

"It's a
Miracle Burner"



The John Zink VERTICAL BI-MIX



- Burns with a short flame natural, refinery or propane gases at low or high pressures; in fact the fuel is often switched from natural to residue to propane without adjustment.
- So installed that all air entering the fire-box passes through the radiating armed spiders, making an efficient steam generator.
- So strong and sturdy, workmen may walk on it when inspecting or repairing the boiler.
- Short flames insure proper heat placement without loss of tubes.

Write for Details Now!

John Zink Co.
TULSA, OKLAHOMA
New York — Los Angeles — Atlanta

Grind Quicker... Grind Smoother

ON EVERY WAR-TIME JOB WITH THESE

SKILSAW TOOLS!

EVERY MAN COUNTS FOR MORE
USING SKILSAW TOOLS!
NEW!
SKILSAW PORTABLE GRINDERS
Just introduced to provide peak war-time production on every job . . . grinding down rough welds, smoothing welding beads, cleaning metals, filing, buffing and polishing on every metal surface. Two Models.

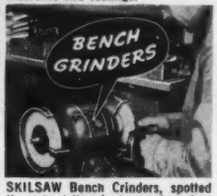
Here are FIVE kinds of SKILSAW TOOLS you shouldn't be without, if you want to *speed* your finishing operations, *reduce* waste and *increase* output in your shops. Do you have welds to grind down? Stainless steel or brass sheets to polish? Castings to clean? Small machine parts to finish? There's a SKILSAW TOOL for each of these operations . . . and the job will get done quicker and better and at lower cost.

These SKILSAW GRINDERS and SANDERS are typical of the entire line of SKILSAW TOOLS—designed to deliver results under today's stepped-up conditions, built to stand hard usage without time-wasting breakdowns. Look into America's busiest war-work plants and you'll see SKILSAW TOOLS on the job. Ask your distributor for a demonstration and you'll see why!

SKILSAW, INC.
5029 Elston Avenue, Chicago

New York • Boston • Buffalo • Philadelphia • Cleveland • Detroit
Indianapolis • St. Louis • Kansas City • Atlanta • New Orleans
Dallas • Los Angeles • Oakland • Seattle • Toronto, Canada

SKILSAW Hand Grinders are swifter, better on all grinding of jigs, dies and for all precise finishing on intricate machines and castings.



SKILSAW Bench Grinders, spotted throughout the plant, speed production . . . keep tools and twist drills sharper, grind small parts quicker.

SKILSAW Belt Sanders speed up all "final-finishing" on flat surfaces of bronze, brass and all sheet metals. Quickly remove paint and varnish.

Sanding stainless steel to a perfect finish is faster with SKILSAW Disc Sanders. Also remove waste metal, buff or polish flat or curved surfaces.

SKILSAW PORTABLE ELECTRIC TOOLS

★ MAKE AMERICA'S HANDS MORE PRODUCTIVE ★

signed and are manufactured by the Osborn Manufacturing Company of Cleveland, Ohio, and likewise special "slow speed" portable polishers are built by the Stanley Electric Tool Division, Inc., of New Britain, Conn.

NuSteel (paste) is recommended for power application. For large areas this same product is available in liquid form under the name NuSteel No. 9 Type 5060.

Recommended Equipment: Stanley No. 182 or No. 187 NuSteel Polishers. Speed—600 R. P.M. Osborn No. 2588-S-2 Special Tampico Wheel Brushes. Any flexible shaft turning 600 R. P. M.

Recommended Materials: NuSteel (paste) or NuSteel Liquid No. 9 Type 5060. NuSteel Dusting Powder.

Procedure

1—If using NuSteel (paste), apply a thin film direct to entire surface with a clean stencil brush.

If using NuSteel Liquid No. 9 Type 5060, apply a thin coating to surface with a cellulose sponge, cloth pad or spray gun.

2—Applying a fair amount of pressure, go over surface back and forth following original finish lines until black residue is brought up and removed. It is very important to have operator polish in a straight line, moving with the wheel rather than swinging arms from a standing position.

Note: For stubborn heat and weld tints a second or third application may be necessary.

KEEP 'EM FIRING with Gar Wood

★ Self-Contained Forced Warm Air Automatic Oil-Fired Heating Units. (from 50,000 to 500,000 B.T.U./Hr.)

★ Industrial Space Heaters up to 500,000 B.T.U./Hr.

★ Boiler-Burner Units up to 25 HP.

Some Distributors and Dealers are receiving Government business for Heating Equipment. If you are one of those who are called upon to submit estimates, heating plans and surveys, we suggest you enlist our cooperation and our engineering service.

Write today for "ENGINEERING STANDARDS"—this valuable 72-page book on Engineering, Installation and Operation of Heating Systems, sent free on request to Sheet Metal Contractors and Dealers, Engineers and Architects. This offer made for a limited time only. Address reply to Dept. 14

HEATING DIVISION
GAR WOOD INDUSTRIES, INC., DETROIT

Protect Freedom—Buy War Bonds

3—Remove remaining residue manually using NuSteel Dusting Powder applied with flannel or soft washed cloth.

4—When Tampico wheel brushes are used for above operation, be sure they are clean and do not carry some other compound. Do not use high speeds—This is important.

◆

Job Record For Price Ceilings

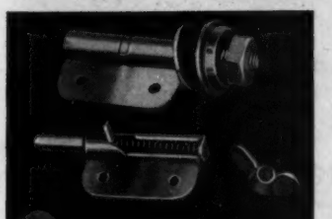
(*Continued from page* 31)

and-material estimates.

On major repairs, you can verify the accuracy of your overhead expense calculation by figuring the overhead per labor hour. For example, if your overhead is $4,800 yearly, or $16 per day, figuring 300 working days to the year, if you employ 2 journeymen, each working 8 hours daily, your overhead per labor hours is $1. If a man spends 5 hours on a job, the overhead on your estimate should have been $5, if less, you lose, but you have a definite record showing that you lost money on this job and that is why you should file your cost records per job systematically and refer to them when making current estimates for the same or similar work.

It isn't necessary to conform minutely to this system, but the fundamental requirements for profitable service control and proper recording under price ceiling regulations are shown here. Make whatever adjustments are required to fit your business, but retain the fundamentals.

H&C DAMPER REGULATOR SETS



ECONOMY TYPE. Three ways to install: 1. With lock nut but without handle (for tamper-proof setting). 2. With handle and lock nut. 3. With handle and wing nut. Nut prevents damper vibration. Handle always indicates position of damper (Patent 2,146,142). Furnished with handy snap end bearing. Complete set in carton. Made only with ¼" bearings.

LIST PRICE.....No. 40¼S....$0.30

BRACKET TYPE. Nut holds damper securely, preventing vibration. Handle which indicates position of damper, may be left in place permanently or removed after adjustment (to prevent tampering). Snap End Bearing on ¼" size, Solid Bearing on ⅜" size. Each set individually packaged.

LIST PRICES.....No. 50¼.....$0.40
No. 50⅜ $0.60

DISK TYPE. Like all H&C sets, this set is equally adaptable to splitter or regular dampers. Snap End Bearing on ¼" size, Solid Bearing on ⅜" size. All parts are rust proofed. Complete set in carton.

LIST PRICES.....No. 80¼.....$0.40
No. 80⅜ $0.60

See your jobber or write for literature and sample.

HART & COOLEY MANUFACTURING CO.
HOLLAND, MICH. · PHILADELPHIA OFFICE: 1600 ARCH ST.

FIRELINE . . .

Every furnace in your neighborhood needs the protection of a Fireline lining, whether the firepot is cracked or in good condition. The owner saves money on fuel and gets a hotter fire; he protects his firepot castings against fire damage for the duration.

Your helper can install it in a few hours' time and you make a quick profit on the job. Fireline is a product you can get NOW and sell under war conditions. Get full information at once and start to cash in on this opportunity. Sold in 50 and 100-lb. drums; also in 5 and 10-lb. cans.

IRONSET . . .

The unexcelled furnace cement. It remains elastic, withstands higher temperatures. Will not shrink, crack, bloat or blister. This improved and perfected product is sold on a money-back guarantee that you will be more than satisfied. Available in 5 and 10-lb. cans—50 and 100-lb. drums.

FIRE-HEARTH . . .

The economical castable refractory for stokers and oil burners. You mix it, pour it into place, and trowel it smooth. That's all there is to it. Fire-Hearth is self-hardening, sets without heat and saves money in both material and labor. Have it ready for those servicing jobs and be sure of a satisfied customer.

Available in 100-lb. bags and 50-lb. cartons.

Jobbers everywhere carry stocks of Fireline products. Available for immediate shipment. No priorities needed.

FIRELINE STOVE & FURNACE LINING CO.
1816 Kingsbury St. Chicago, Illinois

THIS is more than a war of mechanical monsters clashing in the night . . . more than a war of production.

It is a war for markets—*your* markets! The Axis wants your business—wants to destroy it for once and all.

With so much at stake, there is no doubt you will want to do everything you can to meet this Axis threat. Two ways are open: Speed production and BUY BONDS. The only answer to enemy tanks and planes is *more* American tanks and planes—and your regular, month-by-month purchases of Defense Bonds will help supply them. Buy now *and keep buying.*

• HOW THE PAY-ROLL SAVINGS PLAN HELPS

When you install the Pay-Roll Savings Plan (approved by organized labor), you not only perform a service for your country but for your *employees.* Simple to install, the Plan provides for regular purchases of Defense Bonds through voluntary pay roll allotments.

Write for details *today!* Treasury Department, Section R, 709 Twelfth Street, NW., Washington, D. C.

U. S. SAVINGS

Bonds * Stamps

This space is a contribution to Victory by

AMERICAN ARTISAN

Kruckman-Steel Recovery Program

(*Continued from page 29*)

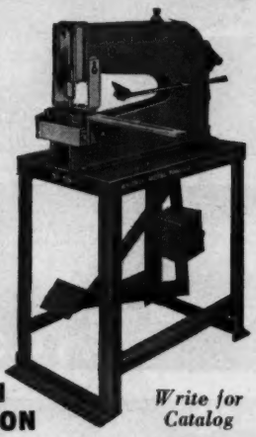
forced sale system had material that warranted a low price of 75c a unit, but received not more than 8c or 9c per unit when they were compelled to sell the material to scrap dealers. Steel Recovery Corporation apparently will try to prevent such tragedies. The maker of a temporarily useless fabrication will lose his time, his interest, and practically all the intangibles which include overhead; but he will receive a better price than the man who is forced to sell to the scrap dealer. The Government policy is to force the owner to contribute some of the loss, as a War service, while the Government contributes a share by paying more for the material than it will bring at prevailing prices when it sells as scrap to the smelting plants.

As has been noted here before, no one in Government will even guess how much iron and steel is expected to be forced into production by the Steel Recovery program. For that reason they frankly say they do not know how much material is idle or excess among readers of the AMERICAN ARTISAN. They think there is a huge quantity, in large and small lots, of all types of steel and iron used and distributed by this industry, which will be put into circulation by the program. Bear in mind WPB expects to get sheets, bars, rods, structural shapes, plates, stainless steel, galvanized iron, black iron, anything it can lay its hands on with a shadow of propriety. But the copper recovery program taught them that estimates about quantities, kinds, and sources from which the types might come,

BUY WHITNEY-JENSEN
METAL-WORKING MACHINERY and HAND TOOLS
for LONG LIFE and ACCURACY

TOGGLE-ACTION
FOOT PRESSES
7" 10" 18" 24" THROAT DEPTHS

Simple, sturdy construction, light weight with plenty of strength, lasting accuracy, low cost, and availability for prompt shipment—these features make Whitney-Jensen Foot Presses a stand-out value for light punching and forming operations. Capacity 2" hole in 16 ga. iron, 100 holes per minute or better.



ANGLE IRON
COMBINATION
SHEAR
NOTCHER
BENDER

The three tools most-used in fabricating angle iron mounted conveniently on a light-weight, sturdy, welded steel stand. Capacity 2" x 2" x ¼" angles.

Write for Catalog

30 YEARS EXPERIENCE BUILDING SHEET METAL TOOLS

OVER 80 USEFUL ITEMS FOR SHEET METAL SHOPS

WHITNEY METAL TOOL COMPANY
91 FORBES STREET • ROCKFORD, ILLINOIS

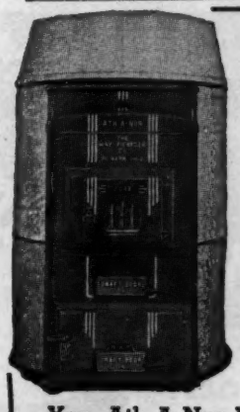
were like quicksands. They expected to receive a total of 2,000,000 pounds of copper and copper base alloys per week, and found that the actual receipts ran in excess of 4,000,000 pounds. On the other hand they confidently predicted receipts of 500,000 pounds of magnesium, but received less than 150,000 pounds.

After the survey is complete, a master inventory will be kept in Pittsburgh, and field offices will be supplied with sheets recording the data that apply to companies in their area. The proceeding will be identical in the Pittsburgh office and the field offices. Suppose a fabricator requires a large quantity of galvanized iron to keep production of a War item at full speed; the WPB Steel Recovery agency locates several firms able to sell, and arranges either a voluntary or forced sale of sufficient galvanized iron to keep the plant going.

Red Tape to Be Minimized

The people here in Washington make the point there will be little form-filling, little paper work. The transaction is quick, direct, and informal. It works much as it sounds. Even when it is necessary to "requisition" the material, the process is quick and drastic. Red tape is shredded. The material is taken first and the merits are argued later. If you do not like the price offered by the Government you are handed half the sum proposed, and you are told you may sue for the balance of the amount you claim is due to you, in the Federal Courts. The law gives you that right. But it does not prevent the Government from seizing what it needs for War use without delay of argument and dickering.

A famous financier and industrialist in California with powerful influences had a plant with machinery



ATH-A-NOR

•

The Aggressive Dealers Choice

ALWAYS

Yes, Ath-A-Nor Furnaces have been the choice of aggressive dealers for over 50 years, and will continue to be, after the duration when business returns to "as usual."

For the duration when furnaces MUST be replaced, use an Ath-A-Nor. You can be certain that it is the utmost in quality, economy and efficiency . . . will perform perfectly and assure you of a satisfied customer . . . and remember, collect all scrap metal and see that it reaches our government as speedily as possible.

MANUFACTURERS OF QUALITY HEATING EQUIPMENT FOR OVER 50 YEARS

MAY-FIEBEGER COMPANY

NEWARK OHIO

HERE'S A NEW WAY TO SELL FILTERS

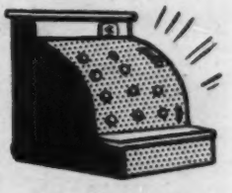
Uncle Sam demands that your customers cut down fuel consumption . . . and here's the easiest way for you to help them comply . . . by selling them a box of RESEARCH AIR FILTERS. Saves fuel for them, increases profits for you!

IT PAYS TO SELL-A-BOX OF AIR FILTERS

SELL 6 FILTERS, an entire box, enough for at least a year's service (filters should be changed twice a year, at least)

IMPROVES HEATING . . . because your customers will change their filters more often . . . and thus eliminate troubles.

SAVES TIRES . . . only one delivery trip instead of two or three because you Sell-A-Box.



INCREASES PROFITS . . . because you double and triple air filter profits with a single sale.

RESEARCH AIR FILTERS

"100 SERIES" disposable filter . . . bound by fiber frame . . . high cleaning efficiency.

"200 SERIES" exclusive re-filable filter, uses no critical materials

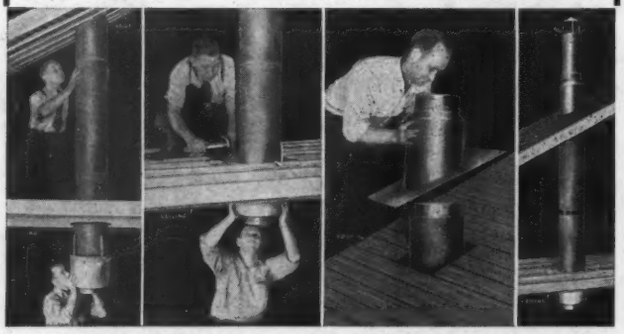
Write for full details.

RESEARCH PRODUCTS CORP., MADISON, WIS.

THE VITROLINER CHIMNEY

Is the answer to the Defense House Contractor for a dependable easily assembled Chimney. Gives double the draft of a masonry chimney. Fully insulated with Fyrex prefabricated asbestos. Constructed of acid-resisting vitreous enamel coated Armco Ingot Iron Pipe. By means of the new Howle Chimney support Vitroliner Chimneys are erected in twenty minutes. Thousands are being installed. Write for details to:

CONDENSATION ENGINEERING CORP.
2515 Archer Avenue **Chicago, Illinois**



and materials the Navy needed, and wanted immediately. The officers in charge opened negotiations. The powerful industrialist did not wish to sell, or lease, or loan. The situation began to drag. A few hours later the phone rang in the industrialist's office. The head of the plant at the Harbor stuttered incoherently:

"They grabbed it, and marched me out."

"Who did?" barked the industrialist.

"The Navy," said the plant head.

The Navy still has the plant, has turned it upside down, and has largely changed its character. So far as this writer knows the industrialist has not yet become reconciled to the proceeding, nor has he made his bargain.

◆

Priority Questions And Answers

(*Continued from page 69*)

rating of defense plants or others with high priority ratings to assemble it, and you will have to get your customer to file an application for a rating on a special form (PD-1A).

Q. I ordered some stokers from a manufacturer and gave him preference ratings. He tells me that he cannot ship the stokers because he does not have a high enough rating to get the fans. What can I do to get a higher rating?

A. Give us the name of the stoker manufacturer, and we will get in touch with him about fans. Send data to Operation Section, Plumbing and Heating

COAL
COAL
OIL
I CAN FREE UP TO ONE-FOURTH OF THESE CARS FOR WAR TRAFFIC!
FIELD
"SCOTTY FIELD"
DEALERS: Field Controls Cut Fuel Consumption Up to 25% . . . — Help Uncle Sam . . . — Give You Something More Profitable to Sell
Write or Wire today for complete information on how the FIELD CONTROL line can UP your sales volume considerably.
--COMPLETE COVERAGE--
Illustrating Field Type M — one of a complete line covering every heating installation in your community. Easily sold; no servicing.
FIELD CONTROL DIVISION
MENDOTA, ILLINOIS

Today's War-Time Industrial Market is Your BEST BET NOW
—LET CLARAGE EQUIPMENT HELP SELL THE JOBS!
New war plants — and plants being converted — need heating, ventilating, exhaust and blow pipe installations. This high priority business can be your salvation. Specify Clarage Fans, Blowers, Unit Heaters — Nationally known and Nationally accepted, these highest quality air handling products help you land the jobs. Write for any information desired.
UNIT HEATERS
EXHAUST FANS
VENTILATING FANS
COMPLETE AIR CONDITIONING
COOLING
VENTILATION
FACTORY HEATING
MECHANICAL DRAFT
FANS and BLOWERS for INDUSTRIAL NEEDS
CLARAGE FAN COMPANY—KALAMAZOO, MICH.
SALES ENGINEERING OFFICES IN ALL PRINCIPAL CITIES

Branch, Railroad Retirement Building, Washington, D. C.

Q. I have lots of jobs signed up to put in grates for conversion purposes. I can get the grates, but I need some bolts, rivets, nuts, and pins to install it. What can I do about this?

A. File a special application (PD-1A), giving complete information relating to the planned conversion and send it to Operations Section, Plumbing and Heating Branch, War Production Board.

Q. I am a jobber and can't buy an adequate supply of grates to take care of what the demand will be this winter. What should I do?

A. You should file an appeal, addressed to the War Production Board, Washington, D. C. Show in the appeal that you need this equipment for anticipated conversion jobs.

Q. How about damper control equipment for heating boilers and furnaces?

A. The sale of these controls is unrestricted and there is available a considerable quantity.

◆

CFM and Furnace Size

American Artisan:

A customer of mine has a one-room school to heat and he has a problem which the Technical Code does not cover. The architect has specified—

Maximum register temperature—120 degrees.

Job to be designed for zero outside.

Minimum air supply 1,200 cfm standard air.

Half of air supply to be taken from outside.

The heat loss figures 80,000 Btu and the problem is—what is the cfm required and what size furnace. I suggested as follows:

To help the men behind the guns!

RANDALL BEARINGS FOR WAR INDUSTRY

One of many styles . . . in all sizes

Flange Pillow Block

If you're concerned with stretching equipment over almost incredible volumes of work, you owe it to yourself and the war effort to learn how Randalls can help you. Randalls are your assurance of continuous, trouble-free bearing operation. Self-aligning and self-lubricating Randalls are easy to install, quiet and smooth in performance, and low in cost. Throughout their long and useful life, they require only minimum attention. Write us today for full information.

RANDALL GRAPHITE PRODUCTS CORPORATION

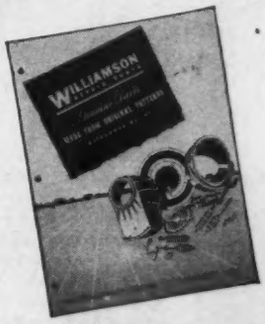
Dept. 1011 609 W. Lake St. Chicago, Ill.

No Let-Down in Supervision

Even though our production of Williamson Furnaces has been curtailed, every casting, fitting and accessory we make for you must pass the same strict, rigid inspections that have made Williamson products first in their field.

NEW:--Williamson now operates a 24-hour furnace parts repair service. Ask your jobber about this service, or get in touch with us direct.

★



FREE!!

SEND FOR THIS WILLIAMSON REPAIR PARTS CATALOG TODAY

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Address Dept. 2

THE WILLIAMSON HEATER COMPANY

CINCINNATI, OHIO

WHITNEY LEVER PUNCHES

No. 4B PUNCH

Length 8½ inches. Capacity ⅛-inch through 16 gauge. Deep Throat—3 inches. Weight—3 pounds. Punches and Dies—¼" to ⅝" by 64ths.

No. 6 PUNCH

Length—36⅛ inches. Capacity — ¼-inch hole through ⅜-inch iron; especially adapted for button punching or templet work. Punches and dies ⅛" to ⅜" by 32nds.

No. 91 PUNCH

CAPACITY

½-inch hole through ¼-inch iron; ⅝-inch hole through ⅜-inch iron; 2-inch hole through ⅛-inch iron. Depth throat, 5 inches. Weight, 82 lbs.

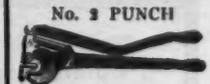
We have tools for every purpose needed by Sheet Metal Contractors.

Ask your Jobber.

No. 1 PUNCH

Length — 34 inches. Capacity — ⅝-inch hole through ⅛-inch iron. Punches and dies in sizes from ⅛ to ⅝ by 64ths.

No. 2 PUNCH



Length — 23 inches. Capacity — ⅜-inch hole through ¼-inch iron. Punches and dies in sizes ⅜-inch to ½-inch by 64ths.

CHANNEL IRON PUNCH

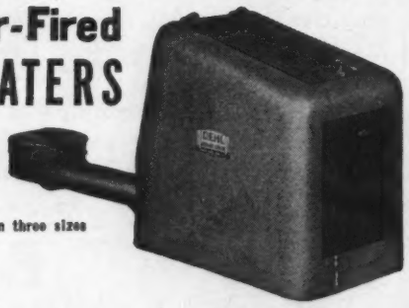
Companion to No. 2 Punch. Every part of the two Punches Interchangeable, including punches and dies. Capacity—¼-inch hole through ¼-inch iron.

W. A. WHITNEY MFG. CO.

636 RACE ST. ROCKFORD, ILL.

YOU CAN STILL SELL

GEHL STOKERS
and Stoker-Fired
WATER HEATERS



Gehl Domestic Stoker in three sizes

Gehl Stoker-Fired Water Heater

Government restrictions have been released on retail stoker sales. Write us your requirements and we shall be glad to give you the very best service that curtailed production will permit.

GEHL BROS. MFG. CO.
Established 1867 Dept. BK-801 West Bend, Wis.

IMMEDIATE DELIVERY OF
REPAIR PARTS
FOR THOSE "RUSH JOBS"

THE height of the furnace repair business is drawing near . . . and this year the volume will be greater than ever before . . . for furnaces MUST BE REPAIRED—to assure comfortable and economical heating during the coming winter.
Securing repair parts rapidly will be one of the problems you will have to contend with in giving your customers your usual service . . . here Northwestern can help you for they are in a position to supply every desired part . . . for all makes of furnaces . . . supply them quickly and with the assurance that they will fit perfectly. Order your repair parts from Northwestern and be sure of servicing your customers quickly and efficiently . . . and don't forget . . . make a scrap heap of all worn out and salvaged parts, and see that they reach our government as soon as possible.

NORTHWESTERN STOVE REPAIR CO.
662 West Roosevelt Road Chicago, Illinois

Reply by
Wm. Scott, Bradfordwoods, Penna.

SOLUTION

Amount of Air.

$120 - 65 = 55$ degrees of temperature rise.

$\frac{80{,}000}{1.08 \times 55} = 1347$ cfm. standard air to be handled by the blower.

$\frac{1347}{2} = 674$ cfm. standard air from outside; also, from inside.

Furnace Size.

It simplifies calculations to bear in mind that no element in the installation, except furnace size, is affected by the source of the air. So, the hourly heat necessary to raise the temperature of air taken from outside to floor temperature must be added to the heat losses already calculated, in order to ascertain what is required of the furnace.

For 70 degrees difference of temperature and 65 degrees assumed as floor temperature, the following equation gives the Btu. rating of the furnace with 20 per cent safety allowance for contingencies:

$$(70.2 \times \text{CFMo} + \text{H}) \times 1.2 = \text{Btu. furnace rating.}$$

Where CFMo means cubic feet per minute from outside, and H is the calculated heat loss from the room.

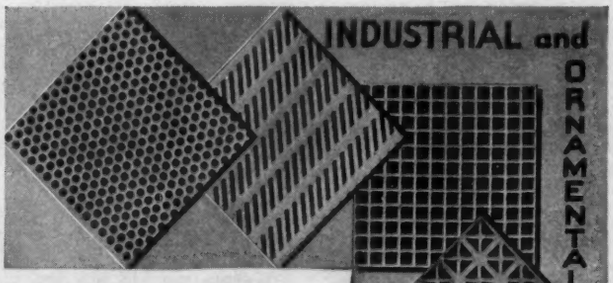
Substituting for the problem in hand,

$(70.2 \times 674 + 80{,}000) \times 1.2 = 152{,}778$ Btu. furnace rating.

The general equation for the net hour heat requirement of outside air is

$$\text{CMFo} \times \text{d} \times .24 \times 60 \times \text{T} = \text{Btu.}$$

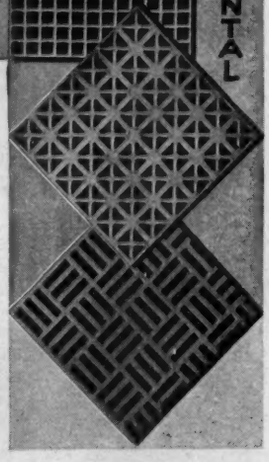
Where d is density; .24 is specific heat of air; 60 is the number of minutes in an hour, and T is the temperature to which the air is to be raised.



Perforated METALS

H. & K. ENLISTS

. . . all its facilities and a wealth of experience in the perforating of metals and other sheet materials to further the essentials of war. Round hole perforations are available in a wide range from as small as .020" dia. to 7" dia.—slot and oblong holes are made as narrow as .008" and as wide as required. Write us for any information needed.



ANY METAL—ANY PERFORATION

The Harrington & King PERFORATING Co.

5649 Fillmore St., Chicago, Ill. New York Office, 114 Liberty St.

With the Manufacturers . . .

Smith of Lincoln Electric Dies

Edward W. P. Smith, 56-year-old consulting engineer for **The Lincoln Electric Company** and a nationally known authority on arc welding was found dead Saturday morning, September 19th, in his berth aboard a train bringing him back to Cleveland from Indianapolis. Mr. Smith, who had addressed a meeting of the American Welding Society at Indianapolis, Friday night, had boarded the train immediately after the meeting.

A veteran of more than 20 years' service with The Lincoln Electric Company, Mr. Smith had traveled extensively in the last year in the interests of the war production program. Visiting many war industry centers, he had been conducting welding courses and giving lectures on the latest techniques in welding. He gave advice to many war concerns utilizing welding in the construction of war equipment.

♦

Personal Appointments

The Independent Pneumatic Tool Company, manufacturers of Thor pneumatic and electric tools, announces new locations of its branch offices at Boston, Mass., and Birmingham, Ala., and the appointment of a new Boston branch manager.

The Boston office, now managed by **Vance G. Turner**, has moved to 78 Brookline Avenue, and the Birmingham office has moved into its own new, modern home at 1411 North Third Avenue.

♦

R. M. Allen, General Sales Manager of **Allegheny Ludlum Steel Corporation**, Oliver Building, Pittsburgh, announces the appointment of **W. G. McFadden** as acting manager of the Chicago office to replace P. E. Floyd, now serving with the government.

HELP!

for BUSY DEFENSE HOUSING CONTRACTORS . .

E-Z-ON

damper regulators

Help you

SAVE

Time and Labor!

Jobbers everywhere Stock E-Z-ONS.

M. A. Gerett Corporation

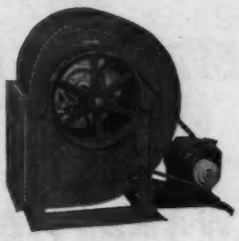
2947 N. 30th Street

Milwaukee, Wisconsin

YOUR **BLOWER** REQUIREMENTS

available at

Schwitzer-Cummins Company



● **BLOWERS FOR EVERY PURPOSE**

HY-DUTY Blowers, 9¾" to 25".
Top and Bottom Horizontal, and Top and Bottom Vertical Discharge.
Top and Bottom Motor Mounting.
Dual Units also available.

● **CENTER DISC WHEEL**

Double Inlet, Double Width.
Reinforced Center Disc.
Designed for Modern Air Conditioning and Heating Applications.
Sizes, 4½" to 50".

● **SINGLE INLET WHEELS**

For Oil Burner, Stoker, and Air Conditioning Applications.
Sizes, 4½" to 50".
Variety of Blade Lengths for each diameter.

● **ENGINEERING DATA**

Write for Catalogues showing complete Performance Data.
Experienced Engineering Department available to help solve your Air Handling Problems.

BLOWER DIVISION
SCHWITZER-CUMMINS COMPANY
1145 EAST 22ND STREET INDIANAPOLIS, U. S. A.

FIRST AID FOR FURNACES!

Until the war is over there are going to be lots of "first aid" calls from ailing furnaces. There'll probably be many requests made this summer to put furnaces in shape for the duration. Successful repair men know the part careful workmanship plays in building up their business; they know also the value of good materials.

That's why leading furnace manufacturers have been using Tharco Asbestos Furnace Cement for years. Repair men, too. They like the way it stands up. Tharco is made from the finest materials by an exclusive process. That's why it "butters" on so easily. That's why it has such high adhesion. That's why it has such great heat resistance—that's why you'll like it, too.

Ask for a free copy of our valuable folder! "The Proper Use and Care of Furnace Cement"

AT LEADING JOBBERS

THARCO *Asbestos* **FURNACE CEMENT**

The Armstrong Company—Detroit • Dallas • Chicago

WE'RE ON
"ACTIVE DUTY"
BUT STILL AT
YOUR SERVICE!

Because R. & G. Registers and Grilles are reporting for duty on scores of essential war jobs, our products for civilian use are necessarily limited. However, our officers are always available for consultation on any problem within our scope.

SEE OUR CATALOG IN SWEET'S

Register & Grille
MANUFACTURING CO., INC.
74 BERRY ST. BROOKLYN, N. Y.

UNCLE SAM
NEEDS YOUR
HEALTH

AMERICA'S GREATEST Inland RESORT

BATHE AND PLAY AT
HOT SPRINGS
NATIONAL PARK • ARKANSAS

Play your part in America's Victory Program by protecting and increasing your energy, vigor and health. Relax at this famous health spa, in the beautiful Ouachita Mountains All sports and recreations; two beautiful lakes with more than three hundred thrilling miles of picturesque shoreline.

The Majestic provides unusually fine accommodations, from single rooms to 2, 3, and 4-room apartments for light housekeeping. Government supervised bathhouse in hotel.
C. EMMETT KARSTON, Manager

DAILY RATES FROM $1.50

EASTMAN LODGE OF LAKE **MAJESTIC**
HOTEL AND BATHS — HOTEL • APARTMENTS • BATHS

The Eastman Hotel in the spaciousness of its own private park...offers excellent rooms conveniently close to everything.Government supervised bathhouse under same roof.
WALTER E. DAVIS, Manager

500 ROOMS FROM $2

Direction: SOUTHWEST HOTELS INC.—H. Grady Manning, Founder

CHICAGO STEEL BRAKE

BEST BY FORTY-TWO YEARS TEST

DREIS & KRUMP MFG. CO.
7404 LOOMIS BLVD. CHICAGO

TRY US FOR QUICK DELIVERY

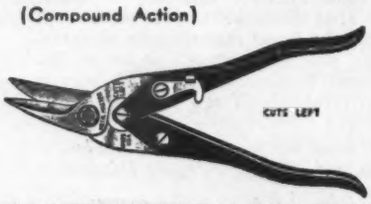
Sheet Metal Fabricating

MACHINES & TOOLS

Write for Catalog and New Bulletin No. 53

WARD MACHINERY CO.
564 W. Washington Boulevard
Chicago, Illinois

WISS "METAL-MASTER" SNIPS
(Compound Action)



"TWICE THE WORK WITH HALF THE EFFORT"

TWO MATCHED PATTERNS M1 (Cuts Left) M2 (Cuts Right) Cut circles, squares and any irregular patterns on Stainless, Dural and Monel Metals with the greatest of ease. Jaws of wear-resisting Manganese Molybdenum Steel. Handles hot-pressed from tough Chrome Vanadium Steel. Nickel steel bolts and nuts to Government specifications. All parts interchangeable. Detachable rubber handle grips at slight extra cost.

J. WISS & SONS CO.
ESTABLISHED 1848 NEWARK, N. J.

Write for Catalog and Prices

SPEED UP ORDERS with a
BEVERLY SHEAR

Throatless shears that cut any shape . . . straight, round or irregular. FASTER—no distortion! Precision—accuracy! Order No. 1 for 14 gauge. No. 2 for 10 gauge. No. 3 for 3/16 inch mild steel and 10 gauge stainless.

BEVERLY SHEAR CO.
3009 W. 110th Pl., Dept. 1
CHICAGO, ILL.

Wage and Hour Law

(*Continued from page 71*)

Employers should not take chances by assuming that the Wage and Hour Law does not apply to employees on a particular job. When borderline cases present themselves, full compliance with the minimum wage and overtime provisions may prove to be good insurance.

Employers who are subject to any provision of the Act must keep certain time and payroll records for each employee. No special forms or accounting systems are required, but the necessary information must be complete and accurate. Instructions for keeping records are available without charge at all offices of the Wage and Hour Division.

Violations and Penalties

Though the Division has never adopted a primarily punitive attitude in its enforcement procedures, the Act itself specifies severe penalties for wilful violations. These include fines up to $10,000, and, for second or subsequent offenses, imprisonment up to six months, a fine, or both.

Employers may be enjoined from violating the Act, and persons may be enjoined from shipping, selling, or delivering in interstate commerce goods produced in violation.

The Act grants employees the right to sue for legally earned but unpaid minimum wages and overtime. If successful in such suits, plaintiffs must be awarded double the amount of back pay due them, plus a reasonable sum for attorney fees, and court costs must be assessed against the defendant.

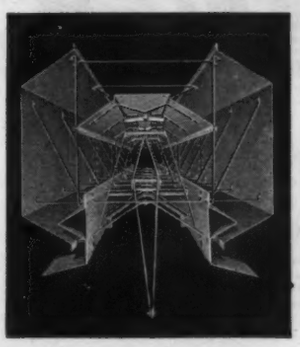
While these punitive provisions serve as a useful warning to would-be violators, the great majority of employers seem quite ready to meet without compulsion their responsibilities under the Fair Labor Standards Act. Nearly four years of experience has taught them that this "floor under wages and roof over hours" has improved the nation's whole economic structure.

Several provisions give the Act considerable additional flexibility. Section 13(a)(1) exempts from both the minimum wage and overtime requirements any person "employed in a bona fide executive, administrative, professional, or local retailing capacity, or in the capacity of outside salesman," as the terms are defined and delimited by the Administrator in Title 29, Chapter V, Code of Federal Regulations, Part 541.*

Among other requirements for exemption as an executive, the employee must receive a salary of at least $30 a week *and* his duties must be fully in line with the official definition. The salary test for an administrative employee is $200 monthly and the nature of his work must coincide with the official description. There is

*Copies of these regulations may be had without cost at any office of the Wage and Hour Division, including the National Office, 165 West 46th Street, New York, New York.

BURT MONOVENT Continuous Ridge VENTILATOR



Saves Installing Time and Costs

The simple construction of Monovent makes it a preferred type of ventilator these days. Particularly adapted for industrial and commercial buildings. Fits any type, any pitch of roof. Installing is quick and easy. Ends of each ten-foot section are made uniform so that sections go together without tailoring on the job. Available in all materials. Monovent costs less than unit ventilators of the same capacity, presents neater appearance.

Write for literature.

THE BURT MFG. CO.
ROOF VENTILATORS • OIL FILTERS
EXHAUST HEADS
301 Main St., Akron, Ohio

SEND FOR CATALOGS
Burt Engineers are glad to help on plans

Tampico
CHICAGO FILTER CO.
JOLIET, ILL.
FILTERS

Repair Parts
FOR ALL HEATING UNITS
BRAUER
REPAIR PARTS
STOVE FURNACE BOILER
OIL STOVE RANGE
A. G. BRAUER SUPPLY CO
Distributors of All Heating and Air Conditioning Equipment
2100 Washington Ave. St. Louis, Mo.

RYERSON CERTIFIED STEELS

10 STRATEGICALLY-LOCATED PLANTS

Principal products include—Alloy Steels, Tool Steels, Stainless Steel, Hot Rolled Bars, Hoops and Bands, Beams and Heavy Structurals, Channels, Angles, Tees and Zees, Plates, Sheets, Cold Finished Shafting and Screw Stock, Strip Steel, Flat Wire, Boiler Tubes, Mechanical Tubing, Rivets, Bolts, etc. Write for Stock List. Joseph T. Ryerson & Son, Inc. Plants at: Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Boston, Philadelphia, Jersey City.

Bremil

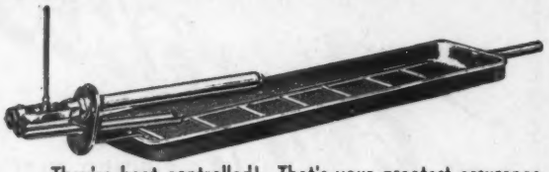
PORTABLE SHEARS

Your work will proceed faster and neater when you use Bremil Portable Shears on the job or in the shop. Write today for literature showing complete line.

ALL-ALLOY No. 2 cuts up to ¼" steel plate.
ALL-ALLOY No. 1 cuts up to No. 11 gauge strip or sheet.
Special blades may be obtained for shearing stainless steel.

BREMIL MFG. CO., ERIE, PA.

THERMO-DRIP HUMIDIFIERS



They're heat controlled! That's your greatest assurance that the heat produced by your customers' furnaces will be properly tempered with moisture—and what a vast difference that will make in building goodwill and sales for you.

AUTOMATIC HUMIDIFIER CO.
18th and Main Streets CEDAR FALLS, IOWA

HIGH EFFICIENCY...
LOW POWER COSTS

LARGE, STREAMLINED INLET MEANS MINIMUM LOSSES DUE TO ENTRANCE FRICTION OR EDDIES

WITH THIS
Sturtevant
MILL EXHAUSTER

B. F. STURTEVANT COMPANY
Hyde Park, Boston, Mass.
Branches in Principal Cities

"Designed and Built by the Pioneer"

no salary test for outside salesmen, but their duties also must conform to the regulations.

What the Law Hopes to Do

No discussion of the Fair Labor Standards Act should overlook the broad purposes of this law which applies to some 360,000 establishments and 16,000,000 employees throughout the nation. Millions of workers, most of them in the low income brackets, have gained new economic security and their employers are safer from price-chiseling competition.

But economic security is not the only goal of the Act.

"The Wage and Hour Law has strengthened our American tradition of decent living standards and fair play," said L. Metcalfe Walling, Administrator of the Wage and Hour Law and the Walsh-Healey Public Contracts Act. "It is the wholesome legal application of those democratic principles which we are fighting to protect.

"And while I am on this subject," Mr. Walling added, "let me reassure those people who were afraid that the Wage and Hour Law and the Walsh-Healey Act have limited our production of war materials. Today there is no 40-hour week, as such, in America's war plants, for ninety per cent of the plants in important war industries now are operating more than 70 hours a week. Three-fourths of them operate some departments at least 120 hours a week. Two-fifths of them are carrying on an important amount of production for more than 160 hours a week.

"The workers in these industries do not stop when the five o'clock whistle blows, either. Many of them average 8, 12, and even 15 hours overtime each week. Ninety per cent of our shipbuilders, for instance, work a 56-hour week.

"The tools of victory are rolling off America's production lines at an unheard of pace. We are winning the battle of production and we are preserving the American way of life in doing so."

◆

Fabricating War Products

(*Continued from page* 61)

construction of the articles must proceed in the usual way of using the shears, hand-provisioning, available forming and assembling tools and means. Nut retainers for the smoke pipes may be handmade or ordered from a source specializing in nut retainers. These are spot-welded to the pipe, over the holes in the corresponding position, provided in the flat blank. The spark arresters are hand-sheared and either spot-welded or seamed. The roof flange is not difficult to make, but there being a number of component parts, it is best to make them on the basis of quantity production repeatedly discussed in these pages. As to the guard, the posts require shearing, provisioning, rolling, braking-forming, all of which is common shop practice.

BB

HOOKS AND HANGERS

THRU LEADING JOBBERS EVERYWHERE

BERGER BROTHERS CO.

Main Office & Factory

229-237 Arch St., Philadelphia, Pa.

★ ★

NEW LECTRO-SHEARS

Cut Metal, Faster, Easier

Black and Decker's new, redesigned Portable Lectro-Shears cut all types of sheet metal quickly, accurately . . . on a radius as small as ¾". Cutting operation always visible. New, improved operating handles provide better balance, easier control on curves and irregular lines. Cut up to rated capacity in steel, galvanized iron . . . 50% greater in non-ferrous metals. Ball-bearing equipped. Universal motor, designed for high speed, trouble-free service. Two sizes—18 and 16 gauge. No. 16 handle equipped with instant release trigger switch and locking pin for continuous operation. See your Black and Decker Distributor, or write direct to: The Black & Decker Mfg. Co., 732 Penna. Ave., Towson, Md.

Leading Distributors Everywhere Sell

Black & Decker

Portable Electric TOOLS

CHENEY PROTECTED METAL

A PROTECTED STEEL SHEET

SPECIAL slate-pitch coating makes it moisture-proof, weatherproof and able to withstand temperatures up to 230° F. without running. *Cheney Protected Metal is tough.* It can be worked with your regular shop tools. Forms easily into warm air heating or ventilating ducts, counterflashings, valleys, metal roofs, downspouts, in fact all general sheet metal work. Immediate delivery on 26 gauge 36"x96" sheets.

Write for illustrated folder NOW!

CHENEY METAL PRODUCTS CO.

33 OXFORD STREET **TRENTON, N. J.**

AXIOM AIR FILTER

The result of fifteen years experience
Lower in cost — Higher in quality
Huge dust capacity—low resistance
Prompt delivery assured
Order now

BLOCKSOM & COMPANY, MICHIGAN CITY, INDIANA

My family was worried

"Certainly glad I stop at recognized hotels on my many business trips. Once, serious illness developed suddenly at home. Though I'd left no forwarding address I was easily traced to my hotel by phone." D. B., Rochester, New York.

AMERICAN HOTEL ASSOCIATION

FOR A FRESH START

STOP AT A **HOTEL**

Std. Arr. No. 1 for Belt Drive

New and Improved "EX" Fans are now available in standard sizes from No. 15 to No. 80 and from 200 to 30,000 CFM Capacity with pressures up to 15" W.G. These fans are commonly used for exhaust problems to handle dust, fumes, shavings, etc., but can be adapted for forced draft service.

"EX" Fans are furnished in all standard arrangements of the N.A.F.M. The design is such that it can be easily modified to suit special assemblies, thus "EX" Fans are ideal for resale purposes, as part of factory assembled units.

Write us about your problems. Send for Bulletin No. EX-41

BAYLEY BLOWER COMPANY

1817 South 66th Street **Milwaukee, Wis.**

REPAIR PARTS FOR ALL MAKES STILL AVAILABLE

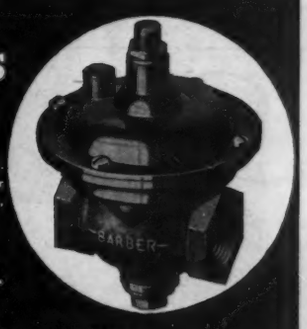
With priorities restricting sales of new equipment, repair business is more essential than ever. PEERLESS dealers can still depend upon prompt deliveries of repair parts for ALL MAKES AND AGES of furnaces. Get the repair business now and you'll be all set to get the new jobs after the war. PEERLESS builds warm air heating equipment in all sizes, including heavy duty units for the largest buildings. Write for dealer proposition and repair parts catalog.

PEERLESS FOUNDRY CO., 1853 Ludlow Ave., INDIANAPOLIS

• BARBER

Gas Pressure REGULATORS

for Reliability!



Certified by A. G. A. Testing Laboratory. Write for Catalog and prices on Barber Conversion Burners, Appliance Burners, and Regulators.

THE BARBER GAS BURNER CO.

3702-4 Superior Avenue

CLEVELAND OHIO Sizes ¼" up

★War Time Trade News★

ECON-O-COL
the "Stronghearted"
STOKER
ECON-O-COL Automatic COAL BURNER
ECON-O-COL STOKER DIVISION
COTTA TRANSMISSION CORP.
ROCKFORD ILLINOIS
THE SHIELD OF QUALITY

NIAGARA
FURNACES
AND
FORCED WARM AIR HEATING EQUIPMENT
for REPLACEMENT . . . for DEFENSE HOUSING
A dependable line of Gravity and Forced Warm Air Furnaces to carry you through the duration.
THE FOREST CITY FOUNDRIES COMPANY
2500 W. 27th Street Cleveland, Ohio

ACCURATE
DEPENDABLE

MASTER
HEAT REGULATOR
TYPE A-23 positive snap action regulator operates on a differential of only ½ degree.
WHITE MFG. CO., 2368 University Ave., St. Paul, Minn.

Syncromatic
T. M. REG.
COAL OIL
AND
GRAVITY FORCED AIR
STEEL FURNACES
3373 No. HOLTON ST., MILWAUKEE, WIS.

Arthur Heim of the **Copper & Brass Research Association**, New York City, is now with the **Copper Recovery Corporation.**

Carl Pihl, Assistant to the Secretary of the **Copper & Brass Research Association**, and a reserve officer in the army is now stationed at a Southern camp.

The Waterman - Waterbury Company, Minneapolis, has war contracts for barracks heating and for a various number of other items. About 90 percent of present business consists of war orders, according to **F. G. Sedgwick**, Vice President. The company flies the "Minute Man" flag, awarded for having 90 percent of employees under the payroll deduction plan.

M. C. Barnum, Waterbury representative for New York, has recently received his commission as Lt. Com. in the U. S. Naval Reserve.

K. E. Wanner, manager of the Waterbury Company, local distributor of Waterbury furnaces in Minneapolis and Hennepin County, has recently received his commission as Ensign in the U. S. Navy.

Julius Skaaren, formerly Waterbury salesman in Southwestern Minnesota, is now in the employ of the Priorities Division of the War Production Board, Minneapolis Office.

A service flag for the 1,792 **Johns-Manville** men now serving in the armed forces of the United Nations, was dedicated by **Lewis H. Brown**, president of **Johns-Manville Corporation** at a ceremony held in New York on August 24, attended by 800 J-M home office employees. Of the 1,792 men in service, 1,623 are with the American forces and 169 with the Canadian forces.

Air Control Products, Inc., Coopersville, Michigan, of which **Robert L. Leigh** is president, has had several war contracts—largely aircraft parts and assemblies, also artillery parts, glider parts and gyro-compass parts. About 85 percent of their present business consists of war orders. Several small additions have been made to the plant and new machinery installed.

The company is flying the "Minute Man Flag"—100 percent of employees are buying bonds.

The new defense contract division has expanded considerably and the company is now making parts and assemb'ies for six airplanes. This division is separated from the register and grille division.

They are producing a good volume of their regular products and have ample stocks.

The **May-Fiebeger Co.**, Newark, Ohio, has a war contract for grey iron castings, sufficient to keep them busy until February of 1943. About 45 per cent of their present business consists of war work. About 95 per cent of the employees are purchasing war bonds.

R. A. Gulick, President, reports that two of his three sons are in service. **R. A. Gulick, Jr.**, is a lieutenant Naval Air Corps and **G. W. Gulick** is an ensign, U. S. N. R. C. B. Sturgeon.

Automatic Humidifier Company of Cedar Falls, Iowa, reports about one-tenth of their present business consists of war orders.

R. E. Hansen, Editorial Service, of **Westinghouse Electric & Manufacturing Company**, East Pittsburgh, Pa., reports that about 3,000 Westinghouse men had entered the army, navy, marine or government service by the first of September, and a few of them have seen action in the Philippines.

CHOOSE:
CONCO Automatic PACKAGED HEAT
BONDS or BONDAGE
CONCO Automatic PACKAGED HEAT
Buy U. S. War Bonds
With manufacturing facilities converted 100% to War Production, our research department is devoted to designing improved units to be added after V day to the complete CONCO line.
CONCO CORPORATION
Div. of H. D. Conkey & Co.
MENDOTA, ILLINOIS

★War Time Trade News★

Minneapolis-Honeywell Regulator Company, Minneapolis, received the first joint Army-Navy Production Award in the Chicago Ordnance District. Brigadier-General Donald Armstrong, chief of the Chicago Ordnance District, presented the "E" flag to **Harold W. Sweatt,** president, and Svenung H. Skogvold and Inga T. Erickson, oldest man and woman in point of service in the production department, representing the workers.

War activities of the company cover a wide range of manufactures which include sighting equipment for the Navy and controls and gun sights for the Army. **Minneapolis-Honeywell** is still making a limited number of its peacetime controls for government and defense-housing projects, and in addition is manufacturing replacement parts for civilian use.

Speaking at a Cleveland Chamber of Commerce luncheon in honor of Admiral Ernest J. King, Chief of the U. S. Navy, **James F. Lincoln,** Head of the Chamber and President of **The Lincoln Electric Company,** pledged Cleveland industries' 100 per cent cooperation in the war effort.

The luncheon was attended by about 1,000 representatives of the City's leading manufacturers.

Admiral King outlined the needs which the Navy has for an all-out war effort and stated that the first of these needs is men and second is machines of war.

After the Admiral's address, the Chamber, through its President, **James F. Lincoln,** speaking for industry generally, pledged itself to the production of the necessary tools of war, provided:

First: Cleveland knows just what and in what volume the tools are needed, and

Second: That the necessary materials be made available.

Perfex Corporation, Milwaukee, has war contracts with the Army Ordnance, Naval Ordnance, Torpedo Station, and Army air forces, totaling a volume of business more than six times their biggest year in civilian work, according to **W. Randolph Lacey,** manager—Armament Divison. Over 95 per cent of present business consists of war orders. In the past twelve months, three additions have been made to their plant, nearly doubling the existing floor space, and the company is taking over still another building which will increase their floor space again by sixty per cent.

Employees are enrolled 100 per cent in the payroll deduction plan for the purchase of war bonds. An active campaign is now under way to persuade those who are not now saving at least ten per cent of their salary in war bonds to bring their savings up to that figure.

The East Moline, Illinois, plant of the **American Machine and Metals, Inc.,** including the **DeBothezat Ventilating Equipment Division,** received the Army and Navy E production award for high achievement in the production of war materials on October first.

M. C. McCormick, formerly advertising manager of **Copper Roofs Corporation,** Milwaukee, is now a first lieutenant in the Cavalry, Fort Riley, Kansas.

The Auer Register Co., Cleveland, is making tank parts for medium M-4 series. The present contract has undetermined dollar volume and the company expects considerable volume in 1943. Switch boxes are a small part of present war orders, but the company expects an increase toward the end of this year.

GILCO
Automatic
FURNACES and WATER HEATERS
J. L. GILLEN CO.
DOWAGIAC • • MICH.

MERCOID
AUTOMATIC CONTROLS
LET'S KEEP THEM GOING!
There will be this season, as in those past, the responsibility of looking after customers' needs—fuel, efficiency check-ups, repairs, replacements. Wherever this applies to Mercoid Controls, we are prepared to assist in every reasonable way, asking only that you keep in mind two things:
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2. Mercoid can best determine this, hence will welcome the return of every possible control to its repair department to the end that necessary repairs can be made with minimum use of new material.
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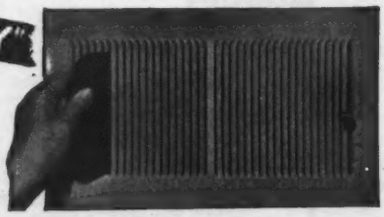

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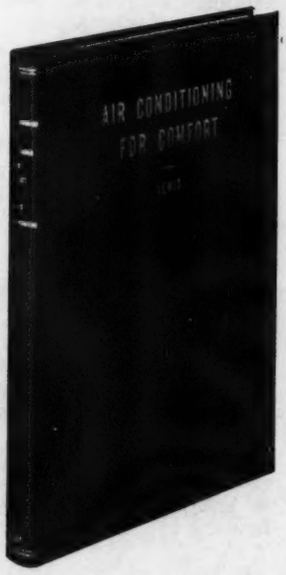

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*Finer, more uniform spray. *Effective operation at Low Pressures. * No internal parts to clog or wear.

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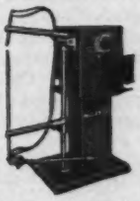

Electric welding equipment of every description to weld from a watch case to a door. Special or standard SPOT WELDERS from ¼ to 500 K.V.A. A.C. Arc Welders from 100 to 400 Amps. We invite contract Spot Welding in large or small quantities.

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20 KW FEDERAL, 14" thr., 60 cycle 220 volts;
20 KVA WINFIELD, 24" thr., 60 cycle 440 volt;
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13 & 15 KVA TAYLOR WINFIELDS;
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10 KVA TAYLOR WINFIELD;
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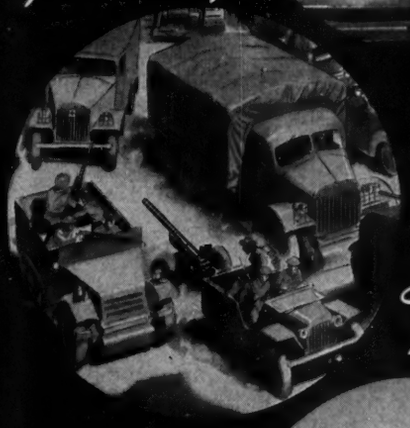
Yesterday



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Regulator Company

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Century MOTORS

294

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- ☐ Repulsion Start Induction
- ☐ Capacitor
- ☐ Squirrel Cage
- ☐ Direct Current Motors
- ☐ Generators—Alternating Current
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